PROBLEMS OF THE URANIUM MINING AND MILLING INDUSTRY

HEARINGS

BEFORE THE

JOINT COMMITTEE ON ATOMIC ENERGY

CONGRESS OF THE UNITED STATES

EIGHTY-FIFTH CONGRESS

SECOND SESSION

ON

PROBLEMS OF THE URANIUM MINING AND MILLING INDUSTRY

PURSUANT TO SECTION 202 OF THE ATOMIC ENERGY ACT OF 1954, WHICH REQUIRES HEARINGS ON THE "DEVELOPMENT, GROWTH, AND STATE OF THE ATOMIC ENERGY INDUSTRY"

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STATEMENT

These hearings constitute part of the hearings held annually by the Joint Committee on "development, growth, and state of the atomic energy industry," pursuant to section 202 of the Atomic Energy Act of 1954.

For the convenience of the public, those portions of the hearings concerning problems of the uranium mining and milling industries have been printed in this publication separate from the balance of the hearings. This publication includes a portion of the testimony during the hearing held on February 19, 1958, when representatives of the Atomic Energy Commission testified, and all of the testimony during the hearings on February 24 and February 25, 1958, when representatives of the uranium mining and milling industries testified.

For the balance of the hearings held in February and March 1958, pursuant to section 202 of the Atomic Energy Act, see Joint Committee hearings entitled "Development, Growth, and State of the Atomic Energy Industry," scheduled to be released about April 25, 1958.

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PROBLEMS OF THE URANIUM MINING AND MILLING INDUSTRY

WEDNESDAY, FEBRUARY 19, 1958

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

Present: Representatives Durham (chairman of the committee), Holifield, Price, Dempsey, Van Zandt, and Hosmer; Senators Anderson, Pastore, Hickenlooper, Bricker, and Dworshak.

Also present: James T. Ramey, executive director; David R. Toll, staff counsel; and George E. Brown, Jr., and Richard Smith, staff members, Joint Committee on Atomic Energy.

Chairman DURHAM. As part of our hearings under section 202 of the Atomic Energy Act held each year on "development, growth, and state of the atomic energy industry," the Joint Committee is much concerned this year with the problems of the domestic uranium mining and milling industry. Our first witness this afternoon who will testify concerning this subject is Commissioner Vance. Chairman Strauss, the other Commissioners, and Mr. Jesse Johnson, Director of the AEC Division of Raw Materials, are also present to answer questions from committee members.

You may proceed, Commissioner Vance.

STATEMENTS OF LEWIS L. STRAUSS, CHAIRMAN, HAROLD S. VANCE, COMMISSIONER, AND JESSE C. JOHNSON, DIRECTOR, DIVISION OF RAW MATERIALS, ATOMIC ENERGY COMMISSION

Mr. VANCE. Mr. Chairman, the first subject assigned to me for presentation today is the raw materials base for the atomic industry.

Our uranium supply situation has remained strong during the past year. Domestic ore production increased to 3.6 million tons.

In terms of U308 concentrate, our domestic production is now at the rate of 10,000 tons annually and is scheduled to increase to more than 15,000 tons annually by a year from now. Before the end of 1959, this rate may reach 17,000 to 18,000 tons.

Our reserve position has continued to improve, with total domestic reserves now estimated at 75 million tons of ore as against 60 million tons last year. This ore reserve is equivalent to approximately 200,000 tons of U308 and, thus, represents about a 10-year supply at the estimated 1960 domestic production rate.

Although domestic ore and mill production increased during the year, foreign sources continued to furnish a substantial portion of our total concentrate purchases. It is expected that these foreign supplies will diminish after the next few years, as many contracts ex-

pire during the period 1960–66, and no new commitments have been made recently.

On the contrary, the Commission has found it advisable, during the past year, to release for sale to the United Kingdom significant quantities of Canadian uranium which were under contract to AEC.

In consequence of our greatly strengthened uranium supply situation, the Commission announced last October that it would limit new domestic procurement which involves construction of new milling facilities. This new policy, of course, does not mean that concentrate production will be cut back or held to present levels. As stated above U308 is scheduled to increase some 50 percent during the next few years.

The real significance and meaning of this new policy is that we have reached a point in our supply picture where deliveries of uranium already contracted for appear adequate for presently projected military and power requirements.

Moreover, since we are in the fortunate position of being able to expand domestic production substantially in case of a sudden rise in requirements, any expansion now beyond levels that can be sustained by the known market in the years ahead, would be wasteful and might subject the industry to future readjustments. While this decision creates some problems, we are studying them, and Mr. Jesse Johnson, our Director of raw materials, will have more to say on that subject in a separate statement on the raw materials situation.

The size of the free world uranium reserves is of great importance both to defense needs, and to the development of the peaceful applications of atomic energy. The useful lifetime of a power generation plant is generally estimated at approximatey 30 to 35 years, and as nuclear plants cannot be easily switched from one fuel to another, an adequate future supply of uranium may well be an important factor in determining the growth of the nuclear-power industry.

In expanding its known reserves of uranium from the small amounts that were known to exist 10 years ago, to its present level, the uranium industry has met the immediate challenge of providing a raw materials base for the atomic energy industry as it exists today. With expansion as needed in the future, we are confident that the industry will wholeheartedly perform as it has in the past 10 years.

Representative DEMPSEY. Mr. Chairman, may I be recognized?

Chairman DURHAM. Mr. Dempsey.

Representative DEMPSEY. Mr. Commissioner, does the Commission consider a 10-year supply of ore reserves in this country adequate?

Mr. VANCE. I will ask Mr. Johnson to reply to that question.

Mr. JOHNSON. I did not hear the question.

Representative DEMPSEY. I asked if the Commission considers a 10-year supply of ore reserves adequate for our Nation?

Mr. JOHNSON. I can only give my personal view.

I think a 10-year supply of ore reserves is not an adequate supply unless you can be very sure that you are going to continue to be able to maintain ore reserves of that kind, because we are building atomic powerplants for 30 and 40 years from now.

Representative DEMPSEY. You have stated that Canada has a 25 to 30 year reserve. Are you expecting us to depend upon Canada for ore for the United States?

Mr. JOHNSON. My view is that the United States will be able to continue to develop uranium ore reserves at a substantial rate, and I believe that we can be reasonably self-sufficient in uranium in the future by continuing development and exploration.

Representative DEMPSEY. Do you know of any prospectors in America that are now prospecting for uranium ore since your speech in New York on October 28, 1957, when you said would not purchase from any new discovery?

(A copy of Mr. Johnson's speech before the Atomic Industrial Forum in New York City, on October 28, 1957, may be found in the appendix, p. 287.)

Mr. JOHNSON. There is very substantial prospecting, development, and exploration underway today, Mr. Dempsey, but there has been a considerable falling off of prospecting, I will admit. But I would not expect to see development and exploration to be seriously reduced since we have a $200 million to a $300 million prosperous domestic uranium industry that will be operating until about 1966.

It is inconceivable to me that this industry would feed upon its ore reserves without making provision for the uranium markets of the future.

Representative DEMPSEY. Mr. Johnson, the uranium business for the United States Government will run between $600 million and $700 million this year; will it not?

Mr. JOHNSON. The domestic uranium business in—I have the figure here—the purchase by the Atomic Energy Commission for domestic uranium concentrates was $134 million in 1956, $171 million in 1957, and we estimate that domestic purchase of uranium concentrate for 1958 will be about $247 million, and that in 1959——

Representative DEMPSEY. What is the foreign purchase at that time?

Mr. JOHNSON. The foreign purchases in 1959, when our own domestic purchases are about $322 million, the total uranium bill will be something over $700 million. There will be $400 million for foreign.

Representative DEMPSEY. $400 million for foreign?

Mr. JOHNSON. Yes, sir.

Representative DEMPSEY. In 1957 you decreased the unit payment for domestic ore and increased it for foreign; why was that?

Mr. JOHNSON. There was no change in the price of any of our negotiated contracts. The contracts have been firm, but over the period of years our domestic prices have been going down as a result of technological improvements, but particularly because of large-size uranium mills and the fact that domestic ores are much higher grade than foreign ores.

For the first time, I think, in 1957 in the whole history of our uranium purchases domestic prices were slightly lower than the foreign prices.

Representative DEMPSEY. Did you not at that time increase the foreign price by 3 percent?

Mr. JOHNSON. No, sir; they were not increased.

Representative DEMPSEY. I have here your financial statement—Atomic Energy Commission statement—and it says:

Domestic sources were decreased 10 percent and foreign countries increased 2 percent.

Mr. JOHNSON. This is the situation: These are average costs per year. Each year there are new mines coming in and there are no changes in the prices of the old mines in general. The contracts remain firm. But as new contracts are brought in, the price may be a little higher or a little lower, which affects the average.

In the case of the domestic prices, our prices in the past were high. We had 100 to 200 ton mills, and inefficient processes. But as larger mills have come in, we have negotiated new contracts at lower prices than we have in the past.

Older mills have been expanded and modernized, and the prices lowered, so that the average prices moved down but the volume of domestic business is going up. It is the new contracts that carry lower prices that have pulled the average of domestic prices down. There has been no change in our ore prices.

Representative DEMPSEY. They do not seem to lower prices on the foreign products, just lower on the domestic. You have increased the foreign.

What are you paying for the foreign product in 1958?

Mr. JOHNSON. In 1958, our average cost of foreign ore—I have the figure for fiscal 1957 which was $11.18 average, and $10.80 for domestic.

Representative DEMPSEY. What is it in 1958?

Mr. JOHNSON. In 1958, I have an estimate here. This is in that October speech. We estimated for 1958 that the foreign concentrate price will be $11.15 a pound on an average from all sources.

Representative DEMPSEY. And the domestic price?

Mr. JOHNSON. The domestic price for fiscal 1958 we estimate at $9.60, which has come down in the sense that the average is coming down because new contracts with large mills and high-grade ore and modern equipment are coming in.

Representative DEMPSEY. I cannot understand why you do not solicit the uranium where it is coming down while you do where it is going up. If you were buying the domestic ore of the United States from now until 1962, you would be getting it for $210 million less than you are going to pay. You have discouraged any exploration in the United States.

Your statement made this morning said that you will not purchase any new discovered ore. So that stopped exploration.

Mr. JOHNSON. I believe the statement was somewhat different than that. The statement was with respect to new proposals. The Commission at this time is faced with limiting commitments for additional domestic uranium production. "Limiting" was the statement. Proposals for new domestic contracts which already have been submitted and are under review still will be considered in the light of discussions that have taken place.

Also, if new contracts are considered, preference will be given to providing a limited market for areas having no present milling facilities or, for that matter, inadequate milling facilities.

Representative DEMPSEY. What notice did you give the domestic producers that this was going to take place; that is, that the purchase of new ore would not be made by the AEC?

Mr. JOHNSON. This was the first announcement to that effect.

I made reference in the previous year to the fact that we may be approaching a period when the objective of the Commission would be

to maintain its ore production at some level rather than continually expand it. There were other similar statements made.

One was made in 1956, at the section 202 hearings, but then, unfortunately, there was added the statement that by 1962 we may be approaching that time. That was a failure to appreciate the tremendous growth that we have had in our domestic uranium.

Representative DEMPSEY. The Commission has just cut off purchasing from the American producers of new ore and continues buying abroad at a higher price, which is a dollar and a half a pound more.

Mr. JOHNSON. We have had firm contracts with foreign sources for uranium. We have not made any new commitments since 1955. We have not cut off any of the domestic contracts. With all of our domestic mills, we have firm contracts, and there have been no cutbacks on any existing domestic contracts. The question is only with regard to new contracts, which may be limited. But we have been making no new contracts with foreign sources for several years.

Representative DEMPSEY. You put the American producers on notice you will not build any more mills for them or that they could not build any more mills.

Mr. JOHNSON. We have put the American producers on notice that the uranium under contract to the Commission at the present time from domestic and foreign sources is adequate for our requirements, and that the objective of the Commission would be to try to hold the production level at about existing levels.

Representative DEMPSEY. Where ore is available with no milling facilities, will the Commission permit construction of additional plants?

Mr. JOHNSON. I can only say——

Representative DEMPSEY. I am asking the Commission. You are speaking for the Commission now.

Mr. JOHNSON. The announcement of last October has created a number of problems, as you pointed out, in various areas of the West. These problems are being reviewed and the information will be submitted to the Commission, as you know, from the recent hearing before the subcommittee at an early date, before March 15, and what action the Commission may take, I could not predict.

Representative DEMPSEY. I would like the Commission to give me some idea about this. You have been out in New Mexico and you have talked to the miners out there. I was there at the same time. They asked you, "What can we do? We have so many hundred tons of ore or million tons of ore," and you said you did not know.

Have you any idea what amount of ore has been discovered that will not be purchased by the Atomic Energy Commission at this time?

Mr. JOHNSON. You mean in the period between now and 1966?

Representative DEMPSEY. I mean for the next few years. Ore that has now been discovered.

Mr. JOHNSON. Before the announcement, our objective has been to maintain a relation between mill capacity and ore reserves that would assure as far as possible an ore reserve supply in a given area for at least 10 years and longer, if possible. We would not want to mine out all of the ore in a few years, but have a long-range milling operation.

I think the important thing is to have uranium production coming after 1966.

Representative DEMPSEY. Do you not know that a great many of the small explorers out there, the fellows are working there day by day and night by night and putting in all the money they have, are losing all the money they put in, even though they discover uranium?

Mr. JOHNSON. It is my impression that in most areas that the small producer is reasonably well taken care of, probably better than some of the people who have developed large tonnages of ore. Under the existing contracts, including our milling contracts that involve new construction, there will be by 1958 a minimum—by the end of 1958—mill capacity in the United States for custom ore—ore from independent miners—of about a million and a half tons a year.

I would anticipate, and I know that a number of the mills buy much more than the minimum quantities. Some of them are wholly custom mills. The market for independent ore by the end of 1958 or early 1959 will be something on the order of 2½ million tons of ore a year, which was our total domestic ore production of only a couple of years ago.

The available market for independent ore is continuing to increase with the construction of the new mills that are now underway in the New Mexico area, in the Wyoming area, and elsewhere.

Representative DEMPSEY. The large production of uranium ore came in the spring of 1955; did it not?

Mr. JOHNSON. I beg your pardon?

Representative DEMPSEY. The discovery was made in 1955 with respect to the big production in America?

Mr. JOHNSON. The largest American field, Ambrosia Lake, was discovered in April 1955 by a single drill hole. It was near the end of 1955 before we had much information on it, and the ore reserves in that area—the big development—came in 1956 and 1957, which accounts for the very rapid increase in our overall reserves.

Representative DEMPSEY. In 1957 you cut the price of domestic ore and raised the price of foreign ore?

Mr. JOHNSON. We did not cut the price of domestic ore. The price of domestic ore has remained the same. Our milling contracts with the large new mills going in are at lower prices than for negotiated contracts in the past with the smaller mills. With the modern milling equipment and the good grade of ore, we have been successful in negotiating lower prices for concentrates. But the mills are still required to pay the regular ore price.

Representative DEMPSEY. I have no objection, and I approve negotiating ore at the lowest prices you can. But then you curtail their production, where you can get the ore for a dollar and a half a pound less than you are paying in Canada. I do not think that is very good judgment. They have much more capacity than we have from a milling standpoint. They have much more reserves than we have, according to your own statement. They have 25 to 30 years; we have 10.

Mr. JOHNSON. It takes 2½ tons of the average Canadian ore to produce the same quantity of uranium oxide that 1 ton of average domestic produces; the ore is lower grade.

Representative DEMPSEY. The United States has some lower grade, too, but you are not giving them cost plus as you do Canada?

Mr. JOHNSON. We are not giving the Canadians cost plus.

Representative DEMPSEY. Is it predicated upon the cost of production?

Mr. JOHNSON. Our own domestic milling prices are on a sliding scale.

Representative DEMPSEY. I am talking about Canada.

Mr. JOHNSON. Your question, then?

Representative DEMPSEY. Is that not on the cost of production?

Mr. JOHNSON. No. It is a negotiated price that is based upon the estimated cost of production and a reasonable profit.

I would say that as far as the Blind River deposit—most of the companies operating the Blind River today—the people who have developed those ores and financed them probably would not have done so if they could have foreseen the problems that they have met to date.

Representative DEMPSEY. In what contract did you negotiate and commit the 2-percent increase in foreign uranium?

Mr. JOHNSON. We did not negotiate any increase in our foreign-ore prices. The negotiated prices stand as they were negotiated.

Representative DEMPSEY. Then this financial report of the Commission is in error, you think?

Mr. JOHNSON. The deliveries under the different contracts commenced as new plants came into production. The price arrangements were established earlier, back in 1955–56, on the basis of the estimated cost of production for these properties. At that time we anticipated we would need all of this production.

Representative DEMPSEY. At the estimated cost of production?

Mr. JOHNSON. At the estimated cost of production; yes, sir.

Representative DEMPSEY. That applied to the foreign?

Mr. JOHNSON. That also applies to the domestic milling contracts. Our domestic milling contracts are based upon an estimated cost of milling price and upon ore price established by the Commission in its published circular. The mills are required to purchase ore from independent miners on terms and conditions no less favorable than those in the published ore-buying circular which the Commission has issued.

So in the United States our negotiated contracts with the milling companies provide for a milling profit. In nearly all cases there is also a substantial mining profit. I believe that the American producer is faring better than most of the foreign producers.

Representative DEMPSEY. You mean because the ore is richer?

Mr. JOHNSON. That is right.

Representative DEMPSEY. That is just because it is richer. Because of that, are you going to give to some foreign country that has leaner ore a better price? That is what you are doing. You have jumped up foreign ore 27 percent in cost and you have reduced the domestic 10 percent.

I do not mind the reduction in the domestic, but I should think you would buy more domestic ore because it is better and cheaper.

Mr. JOHNSON. I would say if we were starting the uranium ore program today there would not be any question about getting all of the production from the domestic producers if it were possible to do so. But when we started out the uranium program—and this is the 10th anniversary of that program—we did not know where we were going to get enough uranium for the military needs and the instructions were to get uranium from every source possible.

We negotiated our contracts on the lowest price we could, taking into account the cost of production. We sought every available source, domestic or foreign. We had passed the critical point of our military shortage when the Ambrosia Lake deposits and the Gas Hills deposits were discovered.

In 1955 we took steps to limit our commitments for foreign contracts. We continued to buy the domestic ore and make domestic milling contracts until October of last year. Due to the very rapid increase of production from domestic sources, as indicated in the figures that I have just given you here, a continuation of that increase would have thrown requirements and supplies out of balance.

Representative DEMPSEY. What you have thrown out of balance, I will tell you, Mr. Johnson, is the economy of this country. That is what you are throwing out of balance. In the mining of ore is where the employees are working and it requires a great many of them.

The ore companies or corporations pay a tax to the United States of 52 percent. We are losing all of that to give foreign ore a preference.

Mr. JOHNSON. In 1956, there were 3 million tons of uranium ore produced in the United States. In the year just passed there were 3,600,000. In 1958 we expect it to go up from 3,600,000 to 5½ million tons. For 1959 there will be 7,200,000 tons, and probably more.

Representative DEMPSEY. Mr. Johnson, will you please tell this committee who it was that created that increase? It was you, was it not?

Mr. JOHNSON. It was the miners and prospectors out West, and they did a wonderful job.

Representative DEMPSEY. Encouraged by the Atomic Energy Commission. That is who encouraged them. But you did not give them any time to prepare themselves when you shut off the purchase. That is what I am complaining about.

I think this is one of the worst things I have ever seen. There are people out there who have spent a lot of money to explore at your request, they are producing, or at least they did produce, but they cannot sell unless they sell at a price that only a mine that has a mill can buy at. That is the situation.

Mr. JOHNSON. I stated to to the subcommittee of the Joint Committee, and I also publicly have stated that I am concerned about some of the problems we have out West. Those problems will be presented to the Commission.

Representative DEMPSEY. Mr. Johnson, I am quite aware of that fact, and I think you are concerned about it. I think the Commission should be, too, and it should change its attitude and do the fair thing by those men who went out to do the job you asked them to do, then after they are successful, you just let them hold the sack, so to speak and there is nothing they can do with it. Are any of our people permitted to sell abroad?

Mr. JOHNSON. That matter is going to be considered by the Commission in connection with the domestic uranium problems.

Representative DEMPSEY. Are they permitted to at this time?

Mr. JOHNSON. Up to the present time I do not believe so. We have been buying everything up until October. I do not know whether our License Division has had any request for a license to sell abroad.

But I think we are approaching the time when we will have requests. I think probably the time is here when consideration should be given to the method of licensing private sales of uranium subject to adequate safeguards and controls.

Representative DEMPSEY. Mr. Johnson, you know it does not exist at this time. You know they are not selling anything at this time because they do not have a license to sell.

Mr. JOHNSON. Nor have there been any buyers. There have been a few inquiries, I think.

Representative DEMPSEY. How about Canada? Are they selling to foreign countries?

Mr. JOHNSON. To my knowledge, Canada has sold no quantities of uranium to any countries aside from the United States and Great Britain. The sales to Great Britain were for material under firm contract to us. The only exception to that might be a matter of a few tons, I believe.

Up to the present time I do not believe there have been any sales, as a matter of fact, to any of the western nations except to the United States and United Kingdom that would run into the 100-ton lots.

Representative DEMPSEY. I have in my hand the Atomic Energy Clearing House and the Congressional Information Bureau publication dated February 17, 1958, and it does mention Canada and states:

> On the basis of information, it is expected that certain uranium mines will be able to produce in excess of the rates specified for delivery in their contracts with El Dorado. Every effort will be made to sell this surplus uranium individually to friendly countries.

Then it says that it was announced in the House some days ago that such an agreement has been entered into with the Federal Republic of Germany. Negotiations for similar bilateral agreements with the Federation of Switzerland and now sales will be made at the conference of the International Atomic Energy Agency in Vienna in October and the Canadians advised that it will make available to the Agency substantial quantities of uranium.

Mr. JOHNSON. I am aware of that, and I know that the Republic of Germany has been making inquiries regarding some uranium purchases, but to my knowledge no contracts have been made for any substantial quantities up to the present. As far as bilaterals are concerned, I think the United States Atomic Energy has more bilaterals than any other country and we ought to be able to work out arrangements whereby domestic producers could sell abroad with proper controls and safeguards. That matter is to be considered by the Commission.

Representative DEMPSEY. You have spoken several times to me about commitments. I would not appreciate any commitments made by any agency of our Government that would not be lived up to, no matter what the cost might be. But I do think that some of them were being made rather carelessly at the expense of the United States.

Our oil production is going down because the foreign production imported is 1,200,000 barrels a day. Potash is going down; lead and zinc are going down in the United States because the importing foreign countries have cheap, virtually slave labor.

I think it is time for us to get awake and pay some attention to our national resources. I hope when the report is made on March 15, it will show that it is to be done. I am not asking you to raise the price

to be paid for United States production, but I am asking you to raise the amount of material purchased so long as United States money is going to pay for the material.

In Canada we had a contract where we had to pay in Canadian dollars. That was a premium. I think the time has come when we should check as to the people who pay these bills and not take advantage of them. We are not getting, in my opinion, the amount of ore purchase that we should get, and we have discouraged the further exploration for it except as to people who have mills. The other people who are making the discovery are not going to be in the picture. They are going to be broke, and I hope we can help them out in some way.

Senator ANDERSON. Mr. Vance, the article from which Congressman Dempsey was quoting says, "Every effort shall be made to sell this surplus uranium"—this in a Canadian speaking in Canada in the House of Commons—"to individual friendly countries and to organizations of friendly countries such as Euratom and the Organization for European Economic Cooperation."

Euratom has a pretty ambitious program of building reactors. Are we to understand that uranium from the United States will not be allowed to compete for that market? They cannot compete for it now. Are the Canadians going to be able to make the only agreements?

Mr. VANCE. No; I do not think one could reach that conclusion, Senator.

Senator ANDERSON. We have a situation that is favorable. Mr. Johnson has pointed out that it takes maybe 2½ tons of Canadian ore to equal 1 ton of the richer American ore. Solely from the standpoint of a manufacturer, you know with that sort of advantage you have a price advantage. It is reflected in the document that Mr. Dempsey was reading from where the price of the United States is now getting below $9 and it is above $11 in other parts of the world.

If you let trade alone, the people who can make it for $9 can outsell the people who make it for $11.50. If American uranium mines had a right to compete, they might be able to get some of this European business and some from Germany and Switzerland as this Canadian represented on the floor of the House of Commons.

Does our Commission believe it is unwise to let the American compete for that market?

Mr. VANCE. Let me answer your question with a general statement that embraces 2 or 3 things you mentioned. The immediate problem we have is the fact that stopping the making of additional contracts for milling last October has created a serious problem for some mining operators or explorers who had assumed that we would go on making contracts without limit. That is the immediate problem.

Mr. Johnson is trying to get together now a complete report for the Commission on just what that problem is. How many of these people are there, how much money have they put into this thing, how badly are they going to be hurt if we do not make contracts with additional mills? That is the immediate problem.

This suggestion that we open up the field so that they can sell abroad might be one answer to that problem, although my present opinion is that it is not an answer to it, and I will tell you why.

Opening up the foreign market does not do these people any good unless there is a foreign market and unless it is a substantial one. So far as I know, at the present time there is not an immediate substantial foreign market that will allow these people to sell their ore abroad even if they were free to do so. So that may not be the answer to it.

Senator ANDERSON. You say there is no advantage unless there is a foreign market and a substantial one?

Mr. VANCE. That is right.

Senator ANDERSON. I would agree at the present time——

Mr. VANCE. Just letting the bars down alone will not do the trick.

Senator ANDERSON. The Republic of Germany may not be much of a market now, neither Switzerland or Euratom or the Organization for European Cooperation, but the Canadians must think there is a possibility or this man would not have gotten up on the floor of the House of Commons and said there was a possibility. Euratom said they will have all these things running by 1963. I think our miners would be very much interested in knowing if they would have a chance at that market or if they will be prevented from exporting any uranium.

Mr. VANCE. Senator, just because somebody gets up on the floor of the House at Ottawa and says there is a potential source in the foreign market does not make it a reality. I do not agree with that man. I think in the next few years there is a very limited market abroad.

Senator ANDERSON. This man is the Canadian Minister for Trade and Commerce. He ought to know a little about trade and commerce or they picked a bad man.

Mr. VANCE. I do not think he did.

Senator ANDERSON. This is a man named Gordon Churchill and I do not know whether he is related to anybody else by that name. We assume that people in high places put people in their cabinets because they have some ability.

It could be that you are right, that the man is wrong. I think he is looking for a future market.

Mr. VANCE. What I am looking for is a real remedy for the situation and not just a theoretical one. I believe it has been the policy of the Commission a long time back, and I know it was when I came to the Commission, that we should work toward a free market in uranium as soon as it was practical to do it. I still think that is the objective.

Consequently, if there is any chance whatever of helping out these people who are in distress by opening up the foreign market, my personal opinion is that we should do it. But I am a little doubtful whether that should be enough.

Senator ANDERSON. I started to break in a minute ago and started to say that I commend Mr. Johnson for his consideration of these miners and his desire to solve the program. Do you imagine the Canadians will sell this ore to Euratom and the United States will buy back the plutonium on a 15-year guaranteed price of $30?

Mr. VANCE. To Euratom?

Senator ANDERSON. Yes.

Mr. VANCE. No.

Senator ANDERSON. We have a proposal to buy back from Euratom and various other agencies for 15 years. Will the Canadians sell the uranium and we buy back the plutonium?

Mr. VANCE. No.

Senator ANDERSON. It is possible?

Mr. VANCE. The only definite proposal we have has to do with the plutonium produced in a pressurized water reactor that will be made by an American manufacturer and will use enriched fuel which we will furnish.

Senator ANDERSON. The reactor is made my an American. Will that mean that the Canadian uranium will not be usable in it?

Mr. VANCE. I do not think so; no. I know of only one specific case where you might say a deal has been made and it is for a pressurized water reactor. The contract is with an American manufacturer. If we buy plutonium that is made in that reactor, it will come out of enriched fuel which we will supply.

Senator ANDERSON. A lot of people regretted a speech that Mr. Johnson made, but actually it was an announcement of AEC policy adopted about 2 weeks earlier.

Mr. VANCE. What is that?

Senator ANDERSON. The statement that Mr. Johnson made in the New York speech was merely the announcement of a policy which the Atomic Energy Commission had reached about 2 weeks previously.

Mr. VANCE. I think that is correct.

Senator ANDERSON. The Joint Committee got copies of Mr. Johnson's speech about the day before he spoke. Ordinarily the committee would be advised in a more current fashion in accordance with the law.

Was there any reason why the Joint Committee was not informed of the decision when it was made?

Mr. VANCE. Senator, whether it was a week or a day, I do not know.

Senator ANDERSON. I just said it was a day. The decision was reached 2 weeks before and we got the copies a day before.

Mr. VANCE. So far as I know, the Joint Committee has been promptly advised of actions of this kind and I assume it had been done in this case.

Mr. STRAUSS. May I comment on that, Senator?

Senator ANDERSON. Yes.

Mr. STRAUSS. Our action papers are ordinarily accompanied by a draft of a letter to the Commission. I would not like to accept the statement that there was a lapse of 2 weeks between the decision and information to the committee until I have had a chance to check that because we attempt to make the information much more current.

Senator ANDERSON. There is confirmation it was 2 weeks ahead of time. In another hearing, and again here today.

Mr. STRAUSS. If that should prove to be the case, it is a slip. We average about five letters or communications to the Joint Committee every working day, and the intent is certainly to keep you fully and currently informed. I certainly would like to look into that and see what, if anything, occasioned the delay.

Senator ANDERSON. A couple of correlated questions.

At the time the price policy was extended from 1962 and 1963 to 1966, the committee was notified several weeks before. Is that not

more customary? We were very promptly advised before it was announced.

Mr. STRAUSS. It would be our usual, and I would say almost invariable, practice to notify you following the decision as soon as possible.

Senator ANDERSON. When we decided to limit the Canadians to their existing milling contracts, did we not give them notice, Mr. Vance, some 8 or 9 months previously?

Mr. VANCE. I would not know, Senator.

Senator ANDERSON. Did we not, Mr. Johnson?

Mr. JOHNSON. The situation there, Senator Anderson, was that at the beginning of 1955 we got a picture of the development and the extent of the Blind River deposits. Up to that time Canadian production had been relatively small in comparison with our requirements and it then looked as if we should limit our Canadian commitments.

So we called the Canadians and said, "You have been working with us for a number of years and we have been interested taking all of the uranium you produced. You have agreed to sell it all to us. We have reached the point now where we think we must place a limit on our purchase arrangement. How much uranium will be developed in the Blind River area on the basis of your present knowledge of the developments now going on?" They came back with an estimate of the production that would be available from the developments then in progress. It was agreed, after discussions, that the AEC commitment would be limited to proposals for milling contracts that were submitted not later than March 31, 1956, and there should be assurance that production would commence at a reasonable date beyond that time.

Minister Howe, of Trade and Commerce, made such an announcement in the Canadian Parliament, I think, on August 3, 1955, saying that no additional contracts would be accepted by the Canadian Government except those that were in proper form and submitted prior to March 31, 1956.

Senator ANDERSON. That is several months, is it not?

Mr. JOHNSON. That is correct.

Senator ANDERSON. Do you not think it would be good to give the American producer that much notice?

Mr. JOHNSON. It would have been desirable.

Representative HOLIFIELD. Mr. Johnson, I would like to inquire about the year term of the domestic contracts of the AEC, first for the purchase of ore from the miners and second for the purchase of yellow cake.

How many years did the domestic contract in each instance run?

Mr. JOHNSON. The domestic what?

Representative HOLIFIELD. Domestic contracts for the purchase of ore from the miners or the purchase of yellow cake from the mills.

Mr. JOHNSON. There are two categories, Mr. Holifield. In the first place, the ore purchase schedule was a published schedule of prices and there have been successive extension of the term and also, since the original schedule was issued in 1948, there have been some changes in the price.

The last price change was made in February of 1951. I cannot give the date of the last extension.

Representative HOLIFIELD. I am directing it to the term of years and not the price.

Mr. JOHNSON. It now extends to March 31, 1962. That is a published ore price, a price at which the Commission will purchase ore delivered to its Monticello, Utah, ore-buying station, and it is also the price at which private millers under their concentrate contract with the Commission are obligated to pay the independent miners for ore delivered to the mills or, to be precise, the independent mills must pay prices no less favorable to the producer than the Commission's published ore-buying schedule. For the period of——

Representative HOLIFIELD. Seven years.

Mr. JOHNSON. That is correct, provided the mill contracts run for that period. Many of our earlier milling contracts——

Representative HOLIFIELD. The published price is for a 7-year period and that obligates the mills as well as the AEC to pay a specified price both for ore and yellow cake for the period of that contract?

Mr. JOHNSON. That is correct with respect to ore prices.

Representative HOLIFIELD. We are speaking of the domestic contracts?

Mr. JOHNSON. Yes, sir.

Representative HOLIFIELD. What are your cancellation terms on those contracts?

Mr. JOHNSON. With regard to the published ore-buying schedules, there is no cancellation provision. Also, we do not have cancellation provisions in our contracts with the domestic mills.

Representative HOLIFIELD. For yellow cake?

Mr. JOHNSON. For yellow cake.

Representative HOLIFIELD. So there is no cancellation. Now, let us go to the foreign contracts for the purchase of ore and the purchase of yellow cake, if any yellow cake is bought abroad.

Are they also for the same number of years, or are they for longer terms?

Mr. JOHNSON. There are various terms on the foreign contracts. But there is one point—we do not purchase ore from foreign producers with one exception, and that was in the case of the Congo, where much of the early shipments of the rich Congo ore was in the form of handpicked pitchblende ore that averaged in excess of 50 percent uranium oxide, and in some cases 65.

Representative HOLIFIELD. Was that on the basis of a longer term than 7 years?

Mr. JOHNSON. The Congo contract has been a series of extensions. The time period generally has been less than 5 years for each of the particular segments of that contract.

Representative HOLIFIELD. Have any of those contracts been renewed since 1955?

Mr. JOHNSON. I am not sure as to the exact date of the renewal of the Congo contract with the Union Minere. It may have been in 1956. But the arrangement was concluded on a governmental basis for the contract with the Government of Belgium and the Government of the United Kingdom and the United States at the end of 1954. I believe that is the date. My memory may be a little in error. I think it was the date of the bilateral. I think it was the end of 1954.

Representative HOLIFIELD. Was that for a 7-year period or a longer period?

Mr. JOHNSON. That arrangement, as I recall, ran to 1960, subject to an option to extend in the event that the material was not desired by the Belgian Government. It was on the basis of that arrangement, which was preliminary to extending the existing contract with Union Minere, that discussions took place in 1955, and finally I believe the contract was dated and signed in 1956. However, the arrangements with the Belgian Government for the contract were made in 1954. The mining company could only make a contract if there was approval on the part of the Belgian Government.

Representative HOLIFIELD. That extended to 1960 at that time?

Mr. JOHNSON. Yes; that is still true.

Representative HOLIFIELD. Since that time it has been extended to 1963?

Mr. JOHNSON. No.

Representative HOLIFIELD. It expires in 1960 and this applies to ore?

Mr. JOHNSON. Mainly concentrate.

Representative HOLIFIELD. You are now speaking of yellow cake?

Mr. JOHNSON. Yellow cake? There is a combination of yellow cake and mechanical concentrate.

Representative HOLIFIELD. That was a noncancellable contract to 1960.

Mr. JOHNSON. That is correct.

Representative HOLIFIELD. In relation to your Canadian contracts, I believe some of them go as long as 1963 or 1965.

Mr. JOHNSON. No. Our Canadian contracts originally all extended only to March 31, 1962.

Representative HOLIFIELD. Is that for ore or yellow cake?

Mr. JOHNSON. That is only for yellow cake. In 1956, I believe, a number of the mines having letters of intent were not able to meet their production schedule, and in those cases the Commission agreed that the delivery date might be extended, but not later than March 31, 1963. In the meantime, prior to this, we had established a domestic uranium price that extended to December 31, 1962. I mean 1966.

Representative HOLIFIELD. Was that a noncancellable contract?

Mr. JOHNSON. They are noncancellable. The contracts run to Eldorado, the Government crown company, for each of the individual mining projects, and our contract with Eldorado is essentially the same as the Government contract with the mining company.

Representative HOLIFIELD. So at this time we are faced with noncancellable contracts in the case of Belgium, to 1960, and in the case of Canada, to 1963; is that true?

Mr. JOHNSON. Most of the Canadian contracts, as far as the Commission is concerned, will expire on March 31, 1962. We will be purchasing but little uranium from Canada under the existing contracts during the period March 31, 1962, to March 31, 1963. So most of our Canadian deliveries will be completed under existing contracts by March 31, 1962. Then we have an option to extend the contracts to the end of 1966 at the domestic price of $8.

Representative HOLIFIELD. Are there any commitments at this time to extend the contracts?

Mr. JOHNSON. No, sir.

Representative HOLIFIELD. So we are faced at this time with contracts for a certain amount of ore with foreign nations which are noncancellable, as I understand.

Mr. JOHNSON. That is correct.

Representative HOLIFIELD. In other words, they are firm. The Government has not reserved to itself the right of cancellation, is that right?

Mr. JOHNSON. That is correct, sir.

Representative HOLIFIELD. In basing our negotiated price on these foreign contracts, I understood your testimony to be that they were on the estimated cost of production plus a reasonable profit.

Mr. JOHNSON. That is correct.

Representative HOLIFIELD. Did the cost of production that you considered include amortization of the capital investment?

Mr. JOHNSON. Yes.

Representative HOLIFIELD. How many years' amortization?

Mr. JOHNSON. Five years' amortization.

Representative HOLIFIELD. So, in the case of contracts that will expire in 1962, it is assumed that would take care of mills that were built 5 years previously, and in production 5 years previously.

Mr. JOHNSON. That will be amortized by 1962.

Representative HOLIFIELD. 1963 will also take care of the other mill that was slower in coming into production?

Mr. JOHNSON. Yes, sir.

Representative HOLIFIELD. Was that same provision extended to our domestic mills?

Mr. JOHNSON. Yes.

Representative HOLIFIELD. The same formula of amortization of 5 years?

Mr. JOHNSON. That is correct, unless we made a contract that was for a longer period than 5 years, but not less than a 5 year period.

Representative HOLIFIELD. The point I am seeking to establish is that these contracts that we have are not cancelable and that they will cover the private capital investment in those plants by the end of the contract.

Mr. JOHNSON. That is correct.

Representative HOLIFIELD. So the Government, as far as foreign contracts are concerned, has discharged its financial obligation by that time and has no further obligation, as far as an amortization liability on the part of the company is concerned, after the years you have decided.

Mr. JOHNSON. That is correct.

Representative HOLIFIELD. If at that time you felt it was in the national interest to cancel foreign contracts and take care of our domestic producers with an accelerated program, there is no reason why we should do that?

Mr. JOHNSON. There is no contractual reason.

Representative HOLIFIELD. There is no contractual reason?

Mr. JOHNSON. That is correct.

Representative HOLIFIELD. As far as you know, there is no diplomatic understanding on this point?

Mr. JOHNSON. There is no understanding. On the other hand, the Canadian Government is concerned about the possibility of the con-

tracts not being extended. The Canadian uranium program was undertaken by the Canadian Government at the request of the United States, at the request of the Commission, and our contacts have been parallel up until the extension of our domestic concentrate price to March 31, 1966. In other words, the Canadians have, following our practice and in agreement with us, established, generally, a program of encouraging private industry similar to our own.

Representative HOLIFIELD. That is true. We are not going to feel liable for their program of encouragement past 1966 when we are stopping ours as of the present, are we?

Mr. JOHNSON. The Canadians stop at 1962, and ours was extended to 1966.

Representative HOLIFIELD. Our encouragement of additional exploration stops now, over and above that which the mills have been designed to handle in terms of quantities of ore. Your speech effectively set a curtailment upon any present encouragement for new development or exploration or new mills, did it not?

Mr. JOHNSON. New mills, not new exploration, I would say.

Representative HOLIFIELD. New exploration on the basis of any hope of selling the newly discovered minerals by companies not now dealing with the mills.

Mr. JOHNSON. There are a number of areas where it will be necessary to carry on additional exploration and development if the mills are to operate through 1966. As I mentioned earlier, the domestic uranium industry will be on the order of $200 million or $300 million a year. I know that most of the producers today are looking forward to the future atomic-power market, and I would assume that they would follow what is normal practice in the mining industry and in the oil industry of attempting to maintain ore reserves so that they do not mine out all their ore and reach a point where they have no future. They will look to the market after 1966. The immediate problem is the question of additional mills and additional expansion of production. I would assume that there will be limitations on further mill construction.

Representative HOLIFIELD. Then your anticipation of additional exploration is really from those mining companies that are now established and who have contracts to supply the mills or to obtain the milling facilities, rather than to new producers in the market?

Mr. JOHNSON. Or new producers in areas where there is ample market for independent ore.

Representative HOLIFIELD. Where there is adequate milling capacity.

Mr. JOHNSON. All of our milling contracts provide that a certain percentage of the mill capacity must be reserved for ore produced by independent miners, miners that are not associated with the milling operation. These contracts will continue to provide a substantial market, and it is a growing market. There will be a major increase by the end of 1959 for the market for the independent ore. I would expect independent production to continue to increase to supply that available capacity.

Representative HOLIFIELD. Then I must ask you this question: What percentage have you set aside for independent production?

Mr. JOHNSON. In 1957 I think 39 percent of all of the ore sold in the United States was by independent producers. We anticipate that

will be on the order of about 30 percent when all the new mills are in operation, but our contract limitation provides for a minimum of 20 percent. Some of the mills operate entirely on custom ores, and many of them by necessity have to buy considerably more custom ore than the minimum contract requirement. So that the minimum contract requirement is 20 percent—I believe that is the correct figure—but it is expected that the purchases will be on the order of 30 percent of the total ore production. For calendar year 1957, it was about 39 percent.

Representative HOLIFIELD. Then we could depend upon the fact that, when your milling capacity which is now built was running to capacity, there would be no domestic market, and no foreign market at this time for any of these people who are now exploring, but who do not have contracts with the mills to handle such ore as they produce?

Mr. JOHNSON. Much of the independent ore is not sold on long-term contracts. Many of the independent miners are operating relatively small mines, and many are exhausted each year; many more are found. So it is not a static situation, but an ever-changing one in which one producer mines out his deposit, somebody else or the same producer finds another and starts mining. That has been the history in the Urivan area in Colorado for a matter of 30 years or more.

Representative HOLIFIELD. Your limitation of 20 percent, then, would apply in case the big mines can produce the 80 percent. Your limitation of 20 percent set aside for the purchase of independent ore, that is.

Mr. JOHNSON. The 80 percent does not necessarily apply to the ore that is owned by the milling company but includes the ore that is dedicated, so to speak, to the mill. As Mr. Dempsey is aware in the Ambrosia Lake, for example, a company like Homestake with a mill may derive its ore, from 3 or 4 independent holdings which may be operated by the Homestake under operating agreements but the properties still are owned by the group that originally acquired and explored them. So in a sense we are dealing, when we speak of the ore belonging to the mill, of ore that from several independently owned properties—in some cases a number of properties—but it is ore that is dedicated to the mill, as the term is used, and has a certain part of the mill capacity for the life of the milling contract. Whereas the other ore is from independent producers who have no association with the milling company at all.

Representative HOLIFIELD. Let me ask this question: As I see it, according to your contractual arrangements, you have certain obligations which you have to carry out in the foreign field for a certain number of years, and those years can be limited mostly to 1963, as far as legal contractual liability is concerned, unless they are extended. Would it be the policy of the Commission—and I will direct this to the Chairman of the Commission—to discuss this matter with the committee before extension or would we be presented as a fait accompli in the nature of an agreement to extend that time on into the future?

The reason I ask this question is that it is an executive obligation on your part to do this, but we are concerned with the domestic mining situation, and we in the Congress have to appropriate the money to buy this ore from year to year. I think we should work together on

this rather than at cross purposes, because an obligation to buy ore in future years at the expense of our own mining interest would be a matter of concern to the Congress in the providing of appropriations to carry out such a commitment. That is why I ask the question at this time, as to whether this matter would be brought to the attention of the committee before the consummation of an extension of foreign contracts, or whether the extension would be made on a judgment of the Commission and you would keep us currently informed post mortem.

Chairman DURHAM. Will the gentleman yield?

Representative HOLIFIELD. Yes.

Chairman DURHAM. I believe that agreement was made before the subcommittee some time ago, was it not?

Mr. TOLL. At a meeting on January 20, 1958, of the Subcommittee on Raw Materials, I believe that Mr. Cook, the Deputy General Manager, made some statement on this point.

Representative HOLIFIELD. I am aware of the statement. I want an answer on the public record.

Mr. STRAUSS. I can only say this, Mr. Holifield. The Commission welcomes the opportunity to discuss its policies with the Joint Committee. It is in effect a sharing of a responsibility which we feel is a very heavy one on our shoulders. We have no desire to confront you with a fait accompli, and of course even if we did, since the Congress holds the purse strings, and since our contracts depend upon appropriations for their fulfillment, it would be the height of imprudence for us to enter into a contractual situation unless we felt that it had your explicit or tacit concurrence. I can't obviously commit my colleagues on this point, but it is my belief, as a result of familiarity with our way of thinking, that we will welcome the opportunity of discussing this with you before we have established a policy.

Representative HOLIFIELD. I appreciate that statement. The reason I asked the question was that the committee has a feeling of responsibility of making governmental contract work good in case it is made by the executive branch. We have a feeling of responsibility of upholding the executive branch in their contracts. In some instances, such as this, which do affect the domestic economy, we feel that we would like to know in advance and express our will one way or another, whether it is followed or not.

Mr. STRAUSS. I am sure, Mr. Holifield, that you are familiar with the fact that all of these Commission policies in the matter of stimulation of exploration and the production of material have been known to the Joint Committee. This is a case of looking backward into a situation where a number of years ago we were doing everything that we could think of to stimulate exploration and production. It is impossible to say to prospectors go out and find as much uranium as you can, but not too much. It is an obvious impossibility. This is the case of an overcompensation—I do not speak in terms of money— in supply and demand. I know of no way to avoid it unless we can be so clairvoyant as to find out exactly what is going to be the result of the stimulation of exploration.

Representative HOLIFIELD. My questions were directed toward understanding the situation and certainly not second guessing the decisions of the Commission in the past, because I do recall you did have that problem and the committee encouraged you to pursue that. It was

not in a spirit of criticism, but I was trying to understand where we stand today, and what we can expect in the future. What modes of correction, if you can call it correction, can be taken in the future?

Mr. STRAUSS. As Mr. Johnson has testified in reply to Mr. Dempsey, we will have before us, we hope, by the middle of next month a careful appraisal of what I might call the hardships that have been developed as a result of this policy, a policy which has put us in a very strong weapons and atoms for peace position. The Commission on the strength of his report and recommendations I can assure you is going to give it very careful and sympathetic consideration. I would not like to anticipate what the decision will be.

Mr. FIELDS. Could we interject one point, Mr. Holifield?

Representative HOLIFIELD. Yes.

Mr. FIELDS. You made reference to our contracts that terminate between now and 1963. I don't believe you meant to overlook that we have some contracts that run longer for South African ore. Mr. Johnson could tell you of those now, but I think that we have covered them fully with the subcommittee. They are already existing contracts.

Representative HOLIFIELD. They run to 1966. What was the length of that contract?

Mr. JOHNSON. The contracts for the individual mills which you saw when in South Africa run for a period of 10 years of production. The 10-year periods are on a staggered basis, depending on when the mills got into production. The first contract expires some time in 1963, several in 1964, several in 1965, and the final ones run to the end of 1966. There will be a decreasing amount of contract production. Of course, as you know, the British are obligated to take a considerable portion of the South African ore. In fact, all of our overseas contracts are through the Combined Development Agency in which the British have a share.

Representative DEMPSEY. Mr. Johnson, what is the price fixed at after 1962?

Mr. JOHNSON. Domestic or foreign?

Representative DEMPSEY. Both.

Mr. JOHNSON. The foreign contracts are the contract prices. The domestic price after 1962 is that announced by the Commission in May 1956, which is $8.

Representative DEMPSEY. That is $8 whether it is domestic or foreign?

Mr. JOHNSON. No; $8 on the domestic. We have a price for domestic concentrates that extends through December 1966 at $8. We have no arrangements for purchasing Canadian concentrates during that period, but we have an option under which we could buy Canadian at this $8 price, in case the option would be exercised.

Representative DEMPSEY. So the price would be the same to both?

Mr. JOHNSON. Yes; but in the South African contracts which are 10-year contracts the price remains fixed for the period, except for fluctuations that result from changes in cost of production in those areas.

Representative DEMPSEY. What amount of material do you expect to buy a year from Africa? What does the contract provide?

Mr. JOHNSON. The South African production now is approximately 6,000 tons a year. That is the full rate of the Combined Agency's con-

tracts. That 6,000 tons is allocated between the United States and the United Kingdom, and we will be getting a portion of that 6,000.

Representative DEMPSEY. You will get a portion of the 6,000?

Mr. JOHNSON. Yes.

Representative DEMPSEY. At what price?

Mr. JOHNSON. At the contract price.

Representative DEMPSEY. What is the contract price?

Mr. JOHNSON. There we get in that question of not a classification on the part of the Commission but the fact that the South African Government has not released the price. We originally were responsible for asking them to classify the information, but when I gave you the statement that our average foreign contracts were around the $11 price—$11.18 now—that is quite close to the average price from either of the 2 major producers, Canada or the United States.

Representative DEMPSEY. Mr. Johnson, I have here the report from the Atomic Energy Commission and it is rather misleading, because it gives the prices. It says domestic $10.80 or $9.60, but it gives the foreign at $11.15.

Mr. JOHNSON. Yes; that is true. They are the average. The problem is to pick out an individual case when the Government itself has not released the information. That is the problem we are up against. I would like to see all the contract prices completely declassified.

Representative DEMPSEY. The Canadian price is $11.15.

Mr. JOHNSON. No; that is the average foreign price. There is very little difference in the Canadian and South African.

Representative DEMPSEY. Is the Canadian price classified, too?

Mr. JOHNSON. They have not released their contract prices. We do not classify them ourselves.

Representative DEMPSEY. At the last meeting that we had, as I recall, Mr. Cook said this was not classified. I am sure that is what the record will show.

Mr. JOHNSON. All I can say is that as far as the Commission is concerned, the Commission has not classified the information, but the countries themselves have not released the information. I am hoping that they will shortly so that we get out of this bind because I am quite anxious to see the whole pricing arrangement laid on the table.

Representative DEMPSEY. Mr. Johnson, I understood that the Commission did.

Mr. JOHNSON. The situation was that at the time the contracts were made uranium production and all information relating to it was considered security information from our national-defense standpoint, and we, the United States, or the Combined Development Agency, requested these countries to classify uranium-production figures and the other information that might give a clue to the production. Then later we declassified this information, advised the countries and in some cases the countries have not issued any information regarding production. In other cases, in the case of South Africa and Canada, the Governments have released the information on production figures, but have not released the pricing information.

Representative DEMPSEY. Was the price classification put on by the Commission?

Mr. JOHNSON. All information regarding the contract provisions, and it related to production, prices, and everything else, was classified

at our request originally, and the countries themselves put on a classification of secret, and the documents were handled in that manner.

Representative DEMPSEY. Thank you very much.

Representative HOLIFIELD. Mr. Chairman, could I pursue one point? In pursuing further the problem that we face in regard to doing something for the domestic producer, I think we established the assumption that we have certain governmental contracts which we are honor bound to follow for a certain length of time, and that the combination of the foreign purchase material and our domestic produced material amounts to a certain amount which I suppose fulfills our present need.

If we have noncancellable contracts which we must take into consideration for our current total of ore produced, the only way we could accelerate our ore production domestically and live up to our contracts would be to buy additional ore which we would stockpile; is that not true?

Mr. JOHNSON. If we bought more than we could use, there would be no alternative but to stockpile it; yes, sir.

Representative HOLIFIELD. So as far as we can see now, with respect to any relief as far as the domestic ore producers are concerned against the Commission's policy of curtailment would have to come in the area of stockpiling ore; would it not?

Mr. JOHNSON. Stockpiling or increased requirements, and the progressive termination of foreign contracts.

Representative HOLIFIELD. I am speaking for the term that these contracts run.

Mr. JOHNSON. That is right.

Representative HOLIFIELD. Then after the ending of our legal obligation, if the policy was adopted of canceling the contracts at that time or sharply curtailing them, then we could buy additional domestic ore.

Mr. JOHNSON. Assuming the requirements were holding at the same level.

Senator DWORSHAK. Mr. Johnson, in the 23d report of the Atomic Energy Commission dated January 1958, on page 432, you have listed the uranium ore processing mills in operation as of June 30, 1957, with a daily capacity of 8,600 tons of ore, and the notation that mills under construction as of June 30, 1957, would provide an additional capacity for 9,375 tons of ore per day, more than doubling the capacity you had last June. When these mills are completed, will you have made adequate provision to take care of all of the small independent producers?

Mr. JOHNSON. That is always a difficult question because we can only see at the present time or at any particular given time the independent production that is available in the area. There could be very radical changes over the next 4 or 5 years. The picture could change very sharply. We have to be very cautious in saying what is going to happen in view of the discoveries that have been made in the last several years. I think on the basis of our experience the increased mill capacity is going to take care of the independent producers very well within the producing areas. But there may be ores found in completely new areas that are remote from mills. Even at the beginning of our program back in 1950, we stated that the Commission could

not guarantee that there would be made available a market or a mill in a new area.

Senator DWORSHAK. I note that most of the mills under construction are those being built by large companies. Does AEC have any control or jurisdiction over the operation of those mills so that allocation might be made of capacity for use of independent operators?

Mr. JOHNSON. We exercise that authority at the time the contract is made. We believe that the only effective way of doing it is to make an agreement at the time we write the contract as to the capacity that will be made available for independent ores, ores aside from those that have been committed to the mill. We endeavor to have that capacity ample to take care of the independent producers. But it would be quite difficult considering the financing problems that the mills have to finance a mill without having an assured source of ore for the mill.

Senator DWORSHAK. What will happen if the production of uranium is expanded and then these operators will be looking around for mill capacity? What predicament will those operators be facing under such circumstances? Will they be able to contract for mill capacity or will they be just unable to be accommodated?

Mr. JOHNSON. With a limited mill capacity the additional ore from independent production would have to be on an allocated basis to the mills and our contract limitations generally provide that not more than 5 percent of the independent ore purchased by a given mill shall be to one producer to the exclusion of others. If there are only a few producers maybe one would get 30 percent of it. But the mills themselves, if they expand their own ore reserves, would still be, as the independent producer, limited to the mill capacity that was originally allotted to the ore controlled by the milling company.

Senator DWORSHAK. Are you encouraging expanded production of uranium at this time?

Mr. JOHNSON. The position of the Commission is one of attempting to hold uranium production at projected levels rather than to provide for ever increasing production over the next several years.

Senator DWORSHAK. Is there much United States exploration work in progress right now?

Mr. JOHNSON. There is substantial amount of exploration work still going on.

Senator DWORSHAK. Does the Atomic Energy Commisison anticipate that additional mill capacity will be authorized in the next year, or do you envision this approximately 18,000-ton-per-day capacity as the ultimate objective?

Mr. JOHNSON. As our chairman stated a few moments ago, the results of a survey being made by the Division of Raw Materials will be presented to the Commission between now and the 15th of March. The Commission will give careful consideration to cases that might be termed hardship cases. But as he mentioned, he could not anticipate what action would be taken by the Commission at this time.

Senator DWORSHAK. Is it an accurate statement to say that the 18,000 tons per day mill capacity now will take care of the anticipated uranium production that you can see in the picture now?

Mr. JOHNSON. Stated in another way, I believe that this mill capacity may not provide an adequate outlet for all of the ore that

has been developed and particularly in certain areas where development during the past year has been at a very rapid rate.

Senator DWORSHAK. What will you do if the production exceeds the current mill capacity?

Mr. JOHNSON. I do not think production is going to exceed current mill capacity, Mr. Senator. What will happen is that there will be operators with ore reserves that will be coming to the Commission seeking an opportunity for an enlarged market so that they might mill or sell their ore. We have that problem before us today and that is the problem that is going to be considered.

Senator DWORSHAK. Do you see these expanded operations requiring more uranium will require additional mill capacity and some of these smaller operators make application to the Commission to construct mills? What will be your attitude on that?

Mr. JOHNSON. That is a matter for the Commission to decide.

Senator DWORSHAK. That is all, Mr. Chairman.

Chairman DURHAM. Mr. Vance, has the Defense Mobilization Agency made a recommendation on the amount of uranium ore?

Mr. VANCE. Do you say, Have they made a recommendation?

Chairman DURHAM. Yes.

Mr. VANCE. Not to my knowledge.

Chairman DURHAM. Have they done that, Mr. Johnson?

Mr. VANCE. I do not know of any, Mr. Chairman.

Chairman DURHAM. I am not sure, but I think they have some funds in their appropriation this year for that purpose.

Mr. VANCE. You mean in their stockpile funds?

Chairman DURHAM. I do not think they are going to stockpile anything like that, but they had an item in there of expense for uranium as I read the report of the committee.

Mr. VANCE. This is the first I heard of it, Mr. Chairman.

Chairman DURHAM. The other day when we were considering an appropriation bill before the House, I believe there was an item for $86,000 for exploration for the Bureau of Mines. How did they get that? Is that an exchange of funds between the Atomic Energy Commission and the Bureau of Mines?

Mr. VANCE. I think I can explain that to you, sir, because at one time I was connected with the Defense Mobilization Administration. Under chapter 3 of the Defense Production Act, the Office of Defense Mobilization is authorized to advance funds or make commitments for various purposes, and one of those purposes was for the exploration for minerals and other vital materials in this country. That work was undertaken by the Department of the Interior of which the Bureau of Mines is a part.

Chairman DURHAM. This is itemized as uranium exploration. The item was uranium exploration.

Mr. VANCE. I would think under the circumstances it is probably a part and parcel of a large exploration plan which contemplated subsidizing the cost of exploration for a variety of metals, even copper, for example.

Chairman DURHAM. I thought all of this was under AEC.

Mr. VANCE. No, sir. I think the program that you refer to is the one I just described which has nothing to do with AEC.

Chairman DURHAM. It is in the appropriation bill, Mr. Johnson. I wish you would look it up and give us some information. I raised a question about it and nobody seemed to know very much about it.

Mr. JOHNSON. I am not sure that I am speaking to the exact appropriation you are talking about, but the Defense Minerals Exploration Administration, which was set up during the Korean war, and is under the Department of Interior, makes exploration loans for various types of minerals, as Mr. Vance has said, including copper, lead, thorium, uranium, and various other minerals that are strategic. When that program was set up, the question was raised as to whether the uranium should come under that program or not. Uranium was put under it because we were not doing private exploration, and we certainly felt that the uranium miners and prospectors should have the same privileges that any other mining group had. I think the Government originally put up 80 percent, and the private operator had to put up 20 percent. More recently the proportion has been cut to 50 percent private funds and 50 percent Government. This is under a program that has been established by Congress and the Department of Interior requests each year its appropriation for this program which includes uranium as well as other strategic minerals.

Chairman DURHAM. It looked like a situation which should not exist, a situation such as you find yourself in here in trying to solve the problem which is difficult. Now the Bureau of Mines are expending funds for exploration.

Senator ANDERSON. I do think, Mr. Chairman, that the Bureau of Mines works closely with the Atomic Energy Commission with these DMEA loans. I happen to know of an application or two that have been made. The Grand Junction office came down and participated in the inspection of the property and the possibilities of its paying out. I think you and I, Mr. Johnson, discussed a loan in New Mexico. That was a DMAE loan, but the advice and consent of the Atomic Energy Commission was obtained on it. I think they work very closely in that matter.

Chairman DURHAM. I am surprised that the Defense Mobilization people are not making some recommendation to you. They are making recommendations on all other strategic materials for defense and security.

Mr. JOHNSON. I would think that this exploration program would be a very desirable one in spite of the situation that we are in which relates only to current overproduction or prospects of current overproduction of uranium. I would think it would be highly desirable if the Government continues to carry on an assistance program for developing strategic minerals which would include uranium. Today copper is in oversupply but another 5 years from now the picture might be entirely different.

Chairman DURHAM. I think it is a responsibility and I think Congress understands it, or at least I do, that the Defense Mobilization organization has a responsibility of telling some agency what they need and what they want for the security of the country. I think this is one item that they ought to have a recommendation on.

Mr. STRAUSS. Mr. Chairman, it is my recollection which I would like to confirm and later submit for the record, that there was an understanding between a previous commission and the Office of De-

fense Mobilization, or if not, its predecessor agency, that divided the field to the extent that uranium was not included among those materials for which the Office of Defense Mobilization had a responsibility for stockpiling or for setting any quantities of procurement. That was left to the Atomic Energy Commission deliberately and by agreement at that time. I will confirm that understanding if I can find it in the records.

(Supplemental information follows:)

The United States Geological Survey has carried out geologic investigations of uranium on behalf of the AEC through transfer of funds for the past 12 years. Except for the period 1950–55 when they carried out a drilling program on the Colorado Plateau supplementing the AEC program of that time of direct exploration for new uranium deposits, their work has involved regional geologic mapping and basic geologic and geochemical research. This program has had as its objective the development of information on long-range resources. The Survey's program has been planned in cooperation with and approved by the AEC and the funds made available have been progressively reduced since 1955. In the fall of 1957 the AEC, with the concurrence of the Bureau of the Budget, determined that the Survey's program beyond fiscal year 1959 should be carried out by funds directly appropriated to the Survey rather than by transfer of Commission funds. The $1,976,000 requested by the Survey in the Interior Department appropriation bill was the amount determined as necessary to continue a proper level of USGS activity in this field, and resulted from AEC–USGS planning prior to the decision that the AEC would no longer support the Survey. The program proposed represents largely the completion of projects already under way. The AEC supported the Survey's request before the Bureau of the Budget.

The Defense Materials Exploration Administration has funds available for loans to private industry for exploration and development of new sources of strategic and critical minerals, including uranium. It is our understanding that funds for this purpose are allocated by the Office of Defense Mobilization from its appropriation.

By letter dated September 17, 1947, from Mr. Hargraves, Executive Chairman, Munitions Board, to Chairman Lilenthal of the AEC, Mr. Hargraves advised that the Army and Navy Munitions Board, under its authority, and the Munitions Board, under the National Security Act of 1947 had under current consideration three programs that required close coordination with the AEC. The first of these programs stemmed from the responsibility given the Secretary of War and the Secretary of Navy through the Army and Navy Munitions Board by Public Law 520 to determine which materials were strategic or critical and the quantities of those materials to be placed in the national stockpile. Quoted from such letter is the following:

"With regard to the stockpiling of source materials for the production of fissionable material, it can readily be assumed with little interpretation that it is the intent of Public Law 585 to place the responsibility for gathering a war reserve of these materials on the Atomic Energy Commission. This assumption only needs confirmation."

Mr. Lilenthal replied to Mr. Hargraves on October 28, 1947, and stated in part as follows:

"* * * the Commission wishes to advise that it does not at this time expect the Munitions Board to assume any responsibility for the procurement of source materials as defined by the AEC."

Chairman DURHAM. That concludes testimony by AEC witnesses today on problems of the uranium-mining industry. The committee is scheduled to hear representatives of industry testify on this subject next Monday and Tuesday, February 24 and 25, 1958.

(Whereupon the portion of the hearing pertaining to the problems of the uranium mining and milling industry was adjourned until 10 a. m. Monday, February 24, 1958.)

PROBLEMS OF THE URANIUM MINING AND MILLING INDUSTRY

MONDAY, FEBRUARY 24, 1958

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The committee met, pursuant to recess, at 10 a. m., in room 304, Old House Office Building, Hon. Carl T. Durham (chairman of the committee) presiding.

Present: Representatives Durham, Price, Hosmer, Dempsey, Van Zandt, and Patterson and Senators Anderson, Gore, and Dworshak.

Also present: Senator Barrett and Representative Thomson.

Also present: James T. Ramey, executive director; David R. Toll, staff counsel; George E. Brown, Jr., and Richard Smith, staff members, Joint Committee on Atomic Energy.

Chairman DURHAM. The committee will come to order. Today we are scheduled to begin the second week of the committee's hearings under section 202 of the Atomic Energy Act on "the development, growth, and state of the atomic energy industry."

I would like to announce at this time that the hearings scheduled for this Thursday, February 27, have been postponed until the following Tuesday, March 4.

I have had the committee staff send telegrams to the scheduled witnesses. I believe that all of them will be able to appear on the following Tuesday.

Our first witness today is Mr. Gordon A. Weller, executive vice president of the Uranium Institute of America.

We are very glad to have you with us, Mr. Weller. Will you please come around.

Senator ANDERSON. Mr. Chairman, Senator O'Mahoney asked me to announce that he planned to be here and had every expectation of being here, but came up with a little cold and he has to stay home.

Chairman DURHAM. We are sorry that we cannot have Senator O'Mahoney with us.

Mr. Weller, you may proceed.

STATEMENT OF GORDON A. WELLER, EXECUTIVE VICE PRESIDENT, URANIUM INSTITUTE OF AMERICA

Mr. WELLER. Thank you, Mr. Chairman.

The Uranium Institute of America appreciates your invitation to again appear and testify before the Joint Committee on Atomic Energy.

My name is Gordon Weller, and I am employed as executive vice president of the Uranium Institute of America. The Uranium Institute is a trade association of individuals and companies engaged in all phases of exploration, production, processing, and conversion of uranium. We are incorporated in the District of Columbia and our principal office is in Grand Junction, Colo.

In a review of an industry's development, growth, and state, as is called for in these particular hearings, it is always the temptation to bear heaviest emphasis on the industry's problems, and to perhaps ignore the many favorable developments that have occurred.

The experience of the uranium industry has been phenomenal over the past several years. Never before in our Nation's history has it been necessary to bring into being a minerals industry involving such a great capital investment, imposing such difficult technical problems, affecting so many people, and of such vital importance to our national security and world position.

That this has been effectively accomplished is a signal tribute to the leadership and administrative ability of Mr. Jesse C. Johnson, Director of the Division of Raw Materials of the Atomic Energy Commission. The uranium and mining and milling industry salutes his great accomplishment.

THE CREATION OF AN INDUSTRY

This effort was inspired by the great importance that has been attached to the establishment of an adequate raw materials base for our atomic energy program. The need was first publicly defined in the Atomic Energy Act of 1946, and the Domestic Uranium Circulars 1 and 3.

But the domestic program was finally given the impetus that was required by Domestic Uranium Circular 5, which continues to serve as a base for uranium procurement. Each circular was drawn before experience could be gained and it has become apparent that Circular 5 was highly restrictive in its application, for two reasons:

1. The circular was confined to two uranium ore types: Carnotite and Roscoelite.
2. The circular established Monticello, Utah, as the sole point of purchase for such ores.

Mr. Chairman, I submit for inclusion in the record at the end of my statement a copy of Domestic Circular No. 5.

In practice, however, the Atomic Energy Commission authorized buying stations and ore processing mills at many different points throughout the West, and accepted for purchase more than 20 different types of uranium-bearing ore.

In 1953 the Congress was made aware of the conflict between the mineral leasing procedures on public lands by oil and uranium industries. Accordingly, Public Law 250, and subsequently the Multiple Mineral Development Act, were enacted to remove such conflicts and to expedite the development of both mineral resources in the West.

Further confidence and enthusiasm were engendered in the uranium industry by the philosophy and hopes embodied in President Eisen-

hower's atoms for peace address before the United Nations on December 8, 1953. In his address, the President declared:

> The United States knows that peaceful power from atomic energy is no dream of the future. The capability, already proved, is here, now, today. Who can doubt if the entire body of the world's scientists and engineers had adequate amounts of fissionable material with which to test and develop their ideas, that this capability would rapidly be transformed into universal, efficient, and economic usage.

This address was a mandate to the United States Congress, to the Atomic Energy Commission and its many industrial and research contractors, to the uranium industry, and, indeed, to the world.

The Congress fulfilled its mandate in the amendment of the Atomic Energy Act of 1946 with the much broader act of 1954.

The domestic uranium industry has met its part of the challenge in the twelvefold increase of uranium reserves.

The Atomic Energy Commission and the Nation's private utility industry has made great strides in the use of atomic energy in the production of electric power. Over $17 billion has been expended in the greatest developmental program in the history of mankind, for both military and peaceful uses of atomic energy.

OUR WAVERING ATOMIC EFFORT

But now, when we are at the very threshhold of achievement, we are told contrary to the President's pronouncements before the United Nations 4 years ago, that atomic energy is not here, that our capability is yet to be proved, and that while we now have established an active uranium industry producing steadily increasing amounts of fissionable material which the President sought, that such production increases now must be curtailed.

Gentlemen, the uranium industry cannot accept the contention that the foundations of our atomic energy program were poorly drawn. We do submit that our atomic capabilities are proved, now, today.

Our only requirement at this moment is a Nation that is willing to stand on its expressed convictions. Our one need is that we now acknowledge the great benefits that will accrue to our Nation and to the world if we follow through on our objectives with the same determination which characterized the inception of the atomic energy program.

We understand that estimates, based upon reactor development as it is currently scheduled, do not foresee economic power for 10 to 20 years. Yet we are also told on good authority that commercially feasible atomic power is within a 5-year reach if adequate funds were appropriated for the purpose.

Reliable estimates set this cost at $500 million for some reactor types, one-half of which could be amortized against the power produced. If these estimates are correct, our ultimate cost of $50 million per year for 5 years would bring this country economic atomic power.

These hearings will undoubtedly receive much expert testimony on later days on this possibility.

But, we are also told that there is considerable resistance to such Government participation—that the problem is one of philosophy or of definition. There appears to be justified concern that such participation will further hazard the present position of our private utility industry.

Gentlemen, this is a matter that is not immediately associated with the operations of the raw materials industry, but it is of vital consequence to our future markets.

If adequate assurance to our basic system of free enterprise is not now embodied in the act of 1954, we urge that immediate action be taken by this committee and the Congress to provide such definition.

We are of the opinion that this issue was tributary to the Commission's decision to curtail further growth of the uranium industry at this time. If this is the case, the confusion surrounding this entire problem is extremely injurious to our Nation's entire atomic adventure and the many benefits which we all anticipate when our present developmental problems have been solved.

This Nation can be unequaled in its achievements so long as it develops crystal clear concepts of the dividing line between public and private enterprise. It can drift into a turmoil of mediocrity by continuing to fight over perpetually unresolved issues.

OUR PRESENT ENIGMA

Certain segments of the domestic uranium industry are experiencing a severe transition at the present time. This has been brought about by the decision of the Atomic Energy Commission to limit further expansion of uranium production to that now projected for early 1959.

At that time, annual capacity of about 17,500 tons of U_3O_8 will have been reached, according to current AEC estimates. The decision to curtail further expansion of domestic mill capacity was announced last October 28.

At that time, the industry was experiencing its greatest rate of growth. This is emphasized by a brief review of the industry's position at that date.

1. Reserves: 70 million tons of 0.25 percent average grade reserves were reported on October 28, 1957, and discovery of new reserves was proceeding at the rate of more than 15 million tons per year. I consider this a conservative estimate. (The reserves are now estimated to exceed 80 million tons, 93 percent of which have been discovered during the past 5 years.)

2. Milling: Capacity in operation had reached 10,000 tons of concentrate per year on October 28, 1957; and during the previous 12 months contracts were authorized for 7 additional mills, representing annual capacity of more than 7,500 tons of concentrate.

These figures indicate that the uranium industry was increasing its size during 1957 by an annual rate of gain of close to 30 percent with respect to reserves, and by 75 percent with respect to authorized milling capacity.

The industry recognized the growth of reserves was progressing at a very satisfactory rate; but it was implicit to the very stimulated development of milling capacity, as indicated by the above figures, that an active exploration for further reserves be pursued.

New and improved techniques of exploration gave further stimulus to our rate of discovery, but associated with those new methods were greatly increased costs. Subsequent testimony will more fully present this picture.

These circumstances are presented to support the contention the industry must make to you at this hearing:

Namely, that while certain suggestion of limited future production did appear in Mr. Johnson's statement to the industry in 1957 and were found in a few other communications to the industry and the general public, these had to be considered in the light of the many positive developments and statements that supported the anticipation of further growth.

The industry, accordingly, continued to pursue an active exploration program in anticipation that its investment in such activities would pay off in future production.

The October 28 announcement brought an abrupt termination to this attitude and imposed serious financial problems for those who were in the more advanced state of property development.

THE 10-YEAR RESERVE-MARKET THESIS

At that time, our 70 million tons of ore reserves represented a 10-year supply according to official statements. Production was at a rate of approximately 4 million tons per year, indicating that four-sevenths of the industry's reserves were then being produced and marketed on a schedule that would support the 10-year supply thesis.

On the basis of mills negotiated and under construction at the present time, capacity for another 3 million tons of annual production will be established, thus apparently supporting the AEC position of last October that reserves and market had been brought to a balance on a 10-year term basis.

Several facts do not support this thesis, however:

1. A large percentage of mill capacity in operation last October represents established facilities which were built on 5-year contracts.

A few of these contracts will soon be reaching their terminal dates, a large part of the domestic contracts will terminate on March 31, 1962. Obsolescence factors contribute further to the complexity of the problems.

A quantitative analysis of these factors cannot be made because of the confidential character of mill contracts with the Atomic Energy Commission.

2. The 10-year reserve-production balance assumes that all districts and properties can be produced on a uniform and easily regulated program.

This is not the case in fact. Some of the remote properties were developed on the terms of Circular 5 which allows extra payment for haulage of ore from such areas to more centrally located mills.

Operators of such properties see the need to exhaust their reserves by March 31, 1962, when Circular 5 expires. In many cases, insufficient milling capacity has been established to permit this to be done. Again a very confusing picture and again a quantitative analysis of this problem cannot be made because the Commission has not made available reserve and production figures for localized districts.

3. Much of the mill capacity is now operating on contracts which allow considerably more than $8 per pound of U_3O_8 price which is scheduled under the announced post-March 1962 buying program.

Accordingly the lower price will impose totally new economics for the mining and milling industry and may force curtailment of some

capacity in districts where ore is either costly to produce, to transport, or to process.

4. Some of the uranium districts are so recent in their establishment that adequate milling capacity has not been developed for the area. This condition reveals imbalance in present and authorized milling capacity with respect to the 70 million tons of reserves which served as a basis for 10-year supply statement.

On the basis of present milling capacity in some districts, 20 to 30 years will be required to process the proven ore. Other districts do not have a life expectancy of more than 5 years.

Accordingly, the 10-year figure is not realistic and does not serve as a dependable base to justifying present mill capacity with respect to ore reserves.

THE AEC INDUSTRY SURVEY REPORT

These facts are presented to you to illustrate that the problems now confronting the Raw Materials Division of the Atomic Energy Commission are highly complex.

Division Director Jesse Johnson has expressed concern—

> over the problems of those who already have developed ore at substantial expense and who as yet may have no adequate market for their ore.

To better appraise the problems involved, the Grand Junction Operations Office, as you know, is making a survey of the problems of the mining districts and of individual operations.

We understand that the report of this survey will be rendered to this committee, and thereupon further hearings will be conducted by Senator Gore's Raw Materials Subcommitte.

By formal and unanimous action of the board of directors of the Uranium Institute, we respectfully ask that the survey report be made available to the uranium industry for study and review at least 2 weeks prior to the commencement of the raw materials hearings.

By the same action we further respectfully ask the Raw Materials Subcommittee to hold its hearings in the West, preferably in two or more of the uranium-producing States, to permit a more intimate study of the problems of the industry.

Senator ANDERSON. You are not going to worry if that runs up until the middle of April, then?

Mr. WELLER. No, sir.

Senator ANDERSON. You would rather have it done out in the field?

Mr. WELLER. We would like to have adequate time to study their report and April would be a far better time to bring the committee out into the West. We are anxious to get a decision made, but we are also anxious to get a deliberate decision made.

THE URANIUM BUYING EXTENSION PROGRAM

On May 24, 1956, the Atomic Energy Commission issued press release No. 830 setting forth certain details concerning plans for the purchase of uranium concentrate between March 31, 1962, and December 31, 1966.

As you know, this announcement established a guaranteed base price of $8 per pound of U_3O_8 contained in concentrates for this period. This announcement was also carried on page 1 of the 20th Semiannual Report of the AEC covering the period January to June 1956.

Officials of the Commission have made frequent reference to the post-1962 program in addresses to the public.

In connection with this announcement, press release No. 830 stated: "This assurance will assist uranium mining and milling firms in planning future operations."

Many firms have taken this statement to their bankers and have proposed programs of finance extending beyond March 1962, and they have been told that the press release was indeed reassuring; but that further details of the program would be required for a formal finance program. Such firms have, accordingly, been forced to make their plans without such assistance.

Press release No. 830 also stated:

> Pertinent details of the new program will be published at a later date.

In testimony before this committee a year ago at these hearings, the Uranium Institute asked for a definition of a "mining property or operation" as used in the post-1962 buying program announcement.

In addresses before at least two major uranium meetings in the West, our Uranium Institute president, Gen. Patrick J. Hurley has urged that the buying extension program be defined by regulation in the Federal Register. These requests have been communicated to officials of the Commission.

Twenty-one months have transpired, one-third of the time between the date of the announcement and the commencement of the program; and the industry is still anxiously awaiting the full details of this program to be defined in a manner that will support sound planning.

CONTINUED EXPLORATION NEEDED

While the uranium industry has been urged to continue exploration for uranium reserves, there has been no incentive to do so. The October 28 announcement has removed the incentive to find more ore since the market has, in effect, been closed to such ore.

Yet the ratio of resources (based on U_3O_8 contained) to milling capacity in Canada is almost twice that of the United States. There is now evidence that the Canadian industry, which was created as the result of the market for uranium by the United States Government, will present a serious competitive factor to the domestic industry.

Furthermore, it is necessary to conduct exploration programs 4 to 6 years in advance of need for concentrate.

It is, therefore, highly essential that adequate means be found to maintain exploration at a level closer to today's activity.

Several methods will be presented at these hearings to effect such activity. They include market guaranties beyond 1966, increased DMEA support, stockpiling of uranium, and payment for ore found in place.

This problem warrants the careful study and solution by the Atomic Energy Commission.

Senator ANDERSON. You say:

> Yet the ratio of resources to milling capacity in Canada is almost twice that of the United States.

What do you mean, that they have twice as much milling capacity, or twice as much ore for the mills?

Mr. WELLER. They have to have more milling capacity than we do in the United States because their average grade is lower.

I am not talking about capacity with respect to tons of ore. I am talking about it with respect to the U–308 produced.

Senator ANDERSON. What is the ratio that you are talking about?

Mr. WELLER. I am talking about the ratio of reserves of U–308 to the milling capacity to produce U–308.

Senator ANDERSON. Is there twice as much milling capacity there?

Mr. WELLER. There is twice as much reserves with respect to milling capacity.

Senator ANDERSON. In Canada?

Mr. WELER. Yes, sir. And for this reason the United States industry, the domestic industry, is placed in adverse competitive position with respect to Canada.

They are in a position to plan their future with a greater degree of confidence than we are in the United States.

Senator ANDERSON. Their ore is not as rich as ours. They have to mine more tons to get the same amount of U–308.

Mr. WELLER. That is right.

Senator ANDERSON. Therefore, the factor would run what? Three or four to one? If they have only half as much milling capacity as they have reserves of ore and the ore is only half as rich, it will take four times as much to mill it, would it not?

Mr. WELLER. I can get the exact figures from my briefcase, if you would like, sir, but let me make an approximation to the situation by stating that the total pounds of U–308 produced in Canada will be approximately the same, or slightly more than that produced in the United States.

To accomplish this they will have to have twice as much milling capacity as the United States because of the lower grade of their ore.

But even so, they are in a more secure position because their reserves are far more extensive than ours.

Chairman DURHAM. How do you figure that? It looks like the investment in the processing plants would be quite a large sum in capital costs.

Mr. WELLER. The Canadian industry is predicated to a condition which is very appealing in the mining industry that is extensive low-grade reserves. Extensive reserves are more important than limited high grade reserves because this permits a large milling facility to be established which can operate on an efficient basis for a longer period of time and the Canadian industry has this condition.

Chairman DURHAM. Do they have it financed by their Government?

Mr. WELLER. Private industry contracts with the agency of the Government to sell their ore. I understand those contracts are set up in a direct reflection to the contract the AEC makes with the Canadian agency.

Chairman DURHAM. The difference is brought about in the contract between the Canadian people and the United States Government by agreement. It was brought about by the fact that there was a different agreement than what the American mining people have at the present time?

Mr. WELLER. Yes, sir.

Chairman DURHAM. Is it a longer term?

Mr. WELLER. No, sir.

Chairman DURHAM. I thought it was the same.

Mr. WELLER. As I understand, the contract with the Canadian people extends, generally, to 1962 with certain operations extending to 1963, March 31.

Chairman DURHAM. The same as ours?

Mr. WELLER. Yes. Of course, if we get a definition of the post-1962 buying program by the Atomic Energy Commission, in this respect the domestic industry will have an advantage over the Canadian industry because they do not have a buying guaranty at the present time by our Government. However, I have learned on fairly authoritative information that the Canadians are at the present time negotiating for direct sale of uranium after such contractural relationships with the United States Government have terminated, and those negotiations are with, in part, users of uranium in the United States.

Senator ANDERSON. In the United States?

Mr. WELLER. Yes.

Chairman DURHAM. I thought they were dealing with Switzerland and Germany.

Mr. WELLER. Yes, sir; they are, but I also understand there have been contacts made in the United States. I am trying to get more information on that at the present time.

Senator ANDERSON. It would be a marvel if you could, because you cannot do it under the law.

Mr. WELLER. Under the law after 1966? This is the period I am talking about. This is a lesson to the domestic industry here. We should be doing the same thing, because we don't know what the conditions will be after 1966.

Senator ANDERSON. Would it be fair to say that the Canadian reserves are maybe five times the reserves of the United States?

Mr. WELLER. That is right.

Senator ANDERSON. And the ores are half as rich?

Mr. WELLER. That is right.

Senator ANDERSON. So they have approximately two times as much U-308?

Mr. WELLER. That is right.

Senator ANDERSON. What about the milling capacity?

Mr. WELLER. The milling capacity, in terms of tons of ore, is probably twice that of the United States, but the concentrate produced is approximately comparative to the United States.

Senator ANDERSON. In yellow cake it comes out about the same?

Mr. WELLER. Yes, sir.

The serious need for an atomic industry evaluation council. A review of the uranium industry's problems, as we are presenting them in this testimony can lead to just one conclusion: Many of our problems would not exist if there were closer liaison between the industry and the overall Atomic Energy Commission program.

Declassification of information in the Raw Materials Division of the Atomic Energy Commission has progressed in a most gratifying way, but there still remains important areas which are not subject to industry review, as indicated by my earlier statement. In the area of uranium utilization, information is seriously lacking.

Now, we have attempted to consider this from many points of view, and we are proposing that there be established an atomic energy industry evaluation council. We visualize this as a council that will be somewhat similar to the National Petroleum Council which is related to the Department of the Interior and through this council information could be organized and presented to the industry in a fashion that would best serve this industry.

I give you as a specific example the shock that this industry experienced when the announcement was made on the thermonuclear power possibilities. The announcements were made for the general public. No announcement was made for the industry and, even when the industry attempted to make contacts with the Commission to get a full explanation, the officials of the Commission simply stood on the official announcement that was made.

The investment in the uranium industry amounts to close to a billion dollars, according to the figures of Mr. Jesse Johnson.

There is a great deal of risk involved in this industry if we do not have sound information. And this information can only be brought about through the cooperation of the Atomic Energy Commission and their understanding of the industry's needs for such information.

Therefore, we feel that a group organized along the lines of the National Petroleum Council, but related to the Atomic Energy Commission as the National Petroleum Council is related to the Department of the Interior, would assist us in this program.

We urge that the Joint Committee on Atomic Energy provide adequate legislation for the establishment of such a council.

Senator ANDERSON. There is now a Raw Materials Advisory Committee in the Atomic Energy Commission. The difficulty is that it does not represent the uranium industry.

Mr. WELLER. That is right.

Senator ANDERSON. And it is not what you call active?

Mr. WELLER. No. And they do not provide a liaison with the industry. They do not carry information from the industry back to the Commission.

Recommendations of the Uranium Institute of America.

1. The Uranium Institute urges that our quest to achieve economic electric power from the atom be pursued with all of the vigor that our present technology and research capabilities will permit. Any slowdown in this effort would be in violation of the philosophy expressed in the President's atom-for-peace address and in the Atomic Energy Act of 1954. Accordingly, the present conflict of public versus private power must be resolved to permit the fullest Government participation in reactor development until commercial feasibility has been achieved.

2. The October 28, 1957, announcement of immediate curtailment of further milling-capacity authorization was a serious shock to the uranium industry which, until then, had been expanding at a tremendous rate. Hardship cases warrant immediate relief by the Commission, based upon the pre-October 1957 policy.

3. The thesis that present authorized and operating milling capacity is adequate to process in 10 years the 70 million-ton domestic uranium reserve of record last October is invalid. Some districts which have been extensively developed mineralogically are seriously deficient in milling capacity to accomplish this objective. Further mills are, therefore, warranted.

4. The AEC is commended for its decision to conduct a survey of problems of mining districts and individual operators. The Uranium Institute respectfully requests that the uranium industry be permitted a period of not less than 2 weeks to study the report before the start of the hearings by the Raw Materials Subcommittee.

The institute also urges these hearings be held in at least two of the uranium-producing States of the West.

5. Experience has shown that 4 to 6 years are required between the beginning of exploration of a new district and the realization of full scale production.

For this reason, exploration for new reserves must not be curtailed. Accordingly, a program to justify further exploration activity based upon a definite market or incentive plan should be devised.

6. It is essential to the orderly conduct of any business to be able to plan future operations well in advance. A definition of the post-1962 buying program by regulation in the Federal Register is therefore urged without further delay.

7. Closer liaison between the uranium industry and the overall program of the Atomic Energy Commission is needed. The Uranium Institute, therefore, urges the Congress to enact legislation creating an Atomic Industry Evalution Council for the fulfillment of this need.

In conclusion, atomic energy has been associated with the future in the minds of Americans. The uranium industry has been asked to have confidence in that future.

But, the uranium industry has been brought to sudden realism, and the future has become a transient guest in our house.

Now, we will place our confidence in something more tangible. Our confidence is in men—you men of the Joint Committee on Atomic Energy—the men of the Atomic Energy Commission.

We are confident of the President of the United States and of the words he spoke on December 8, 1953. We are confident of the men who made his words a reality.

Atomic energy is here—now—today. Let us treat it as such. Let us shape the yardsticks for our new world and pursue our quest with a real confidence—a confidence in ourselves to do the job.

Chairman DURHAM. Does that complete your statement?

Mr. WELLER. Yes, sir.

Chairman DURHAM. Mr. Anderson, do you have any further questions?

Senator ANDERSON. No.

Chairman DURHAM. Senator Barrett?

Senator BARRETT. No questions, Mr. Chairman.

Chairman DURHAM. Thank you very much for your statement.

Mr. WELLER. Thank you for permitting us to appear.

(The circular previously referred to follows:)

[Domestic Uranium Program Circular 5, Revised]

Amended October 9, 1953

TITLE 10—ATOMIC ENERGY

CHAPTER I—ATOMIC ENERGY COMMISSION

PART 60—DOMESTIC URANIUM PROGRAM

GUARANTEED MINIMUM PRICE FOR URANIUM-BEARING CARNOTITE-TYPE OR ROSCOELITE-TYPE ORES OF COLORADO PLATEAU AREA

§ 60.5 *Guaranteed minimum price for uranium-bearing carnotite-type or roscoelite-type ores of the Colorado Plateau area*—(a) *Guarantee.* To stimulate domestic production of uranium-bearing ores of the Colorado Plateau area, commonly known as carnotite-type or roscoelite-type ores, and in the interest of the common defense and security, the United States Atomic Energy Commission hereby establishes the guaranteed minimum prices specified in § 60.5a effective during the period March 1, 1951, through March 31, 1962, for the delivery of such ores to the Commission at Monticello, Utah, in accordance with the terms of this section and § 60.5a.

NOTE: In §§ 60.1 and 60.2 (Domestic Uranium Program, Circulars No. 1 and 2), the Commission established guaranteed prices for other domestic uranium-bearing ores, mechanical concentrates, and refined uranium products.

(b) *Effect on §§ 60.3 and 60.3a.* Sections 60.3 and 60.3a, which also apply to carnotite and roscoelite ores, are not revoked by the issuance of this section and § 60.5a and sellers may elect to deliver ore under the provisions of §§ 60.3 and 60.3a rather than under this section and 60.5a, at their option, during the unexpired terms of §§ 60.3 and 60.3a (through April 11, 1951). It is believed, however, that in most cases the provisions of this section and § 60.5a will be more favorable to producers.

(c) *Definitions.* As used in this section and in § 60.5a, the term "buyer" refers to the U. S. Atomic Energy Commission, or its authorized purchasing agent. The term "ore" does not include mill tailings or other mill products. The term "seller" refers to any person offering uranium ores for delivery to the Commission. Weights are avoirdupois dry weights, unless otherwise specifically provided.

(d) *Deliveries of not to exceed 1,000 tons per year.* To aid small producers, any one seller may deliver without a written contract but otherwise in accordance with this circular up to, but not exceednig, 1,000 short tons (2,000 pounds per ton) of ores during any calendar year.

(e) *Deliveries in excess of 1,000* tons per year. Sellers desiring to deliver in excess of 1,000 short tons (2,000 pounds per ton) of ores during any calendar year will be required to enter into a contract with the Commission providing for, among other things, a rate of delivery and the total quantity of ore to be delivered.

(f) *Deliveries.* Seller, at his own expense, shall deliver and unload all ores at the buyer's depot at Monticello, Utah. Deliveries shall be in lots of not less than 10 short tons (2,000 pounds per ton) unless special arrangements have been agreed upon by buyer, but such lots may be delivered in more than one load. Days and hours during which ore may be delivered will be posted at the depot.

(g) *Weighing, sampling and assaying.* Buyer will bear the cost of weighing, sampling, and assaying. The net weight of each load will be determined by the buyer's weighmaster on scales which will be provided by the buyer at or in the vicinity of the purchase depot and such weight will be accepted as final. A weight ticket will be furnished seller or his representative for each load. Each lot of ores will be sampled promptly by the buyer according to standard practice and such sampling will be accepted as final. Seller or his representative may be present at the sampling at his own expense. The absence of seller or his representative shall be deemed a waiver of this right. Buyer will make moisture determinations according to standard practices in ore sampling. All final samples will be divided into four pulps and distributed as follows: (1) The seller, or his representative, will receive one pulp; (2) the buyer will retain one pulp; (3) the other two pulps will be reserved for possible umpire analysis. The buyer's pulp will be assayed by the buyer. The seller may, if he desires,

and at his own expense, have his pulp assayed by an independent assayer. In the case of disagreement on assays as to any constituent of the ores, an umpire shall be selected in rotation from a list of umpires approved by the buyer whose assays shall be final if within the limits of the assays of the two parties; if not, the assay which is nearer to that of the umpire shall prevail. The party whose assay is the farther from that of the umpire shall pay the cost of the umpire's assay for the constituent of the ores which is in dispute. In the event that the umpire's assay is equally distant from the assay of each party, costs will be split equally. In case of seller's failure to make or submit assays, buyer's assays shall govern. After sampling, the ores may be placed in process, commingled, or otherwise disposed of by buyer.

(h) *Payment.* Buyer will make payment promptly but payment will not be made until an entire minimum lot of ten short tons (2,000 pounds per ton) has been delivered and accepted, unless special arrangements have been agreed upon by buyer, in which case there may be an extra charge for assaying and sampling. Moisture determinations, analyses and settlement sheets, together with the check in payment, will be mailed to seller.

(i) *Inquiries.* All inquiries concerning the provisions of this section and § 60.5a, offers to deliver ores, or questions about the Commission's domestic uranium program in the Colorado Plateau area should be addressed to:

United States Atomic Energy Commission, Post Office Box 270, Grand Junction, Colorado; Telephone: Grand Junction 3000.

(j) *Licenses.* Arrangements will be made by the Commission for the issuance of licenses, pursuant to the Atomic Energy Act of 1946, covering deliveries of source material to the Commission under this section and § 60.5a.

(k) *Limitation of commitment.* Commitments by the Commission to accept delivery of ores are limited to the provisions of this section and § 60.5a as amended from time to time, or to written contracts between the Commission and sellers. Other commitments purporting to be made by the Commission's field personnel or other agents of the Commission will not bind the Commission unless they are in accord with the provisions of this section and § 60.5a or other official circulars.

§ 60.5a. *Schedule 1; minimum prices, specifications, and conditions*—(a) *Prices.* Payment for delivery of the ores will be computed on the following basis:

(1) *Uranium.* (i) Ores assaying less than 0.10 percent; no payment. Any such ores which are delivered to the purchase depot shall, unless otherwise specifically agreed to by buyer, become the property of the buyer as liquidated damages for buyer's expense of weighing, sampling, and assaying, and after sampling may be placed in process, commingled, or otherwise disposed of by buyer. If seller has any question as to the quality of his ore, it is suggested that before shipment and delivery to the purchase depot a representative sample be submitted to the buyer or to one of the umpires for assay at seller's expense. The buyer at its discretion may assay a limited number of samples without charge.

(ii) Ores assaying 0.10 percent U_3O_8 and more, as follows:

U_3O_8 assay:	*Payment per pound U_3O_8*	U_3O_8 assay—Continued	*Payment per pound U_3O_8*
0.10 percent	$1.50	0.16 percent	2.70
0.11 percent	1.70	0.17 percent	2.90
0.12 percent	1.90	0.18 percent	3.10
0.13 percent	2.10	0.19 percent	3.30
0.14 percent	2.30	0.20 percent and more	3.50
0.15 percent	2.50		

(iii) Premiums on uranium: $0.75 per pound for each pound of U_3O_8 in excess of 4 pounds U_3O_8 per short ton (2,000 pounds per ton) of ore and an additional premium of $0.25 per pound for each pound in excess of ten pounds U_3O_8 per short ton. Fractional parts of a pound will be paid for on a pro rata basis to the nearest cent.

(2) *Vanadium.* V_2O_5 at $0.31 per pound up to, but not exceeding, ten pounds of V_2O_5 for each pound of U_3O_8 contained in ores. No factor will be included for V_2O_5 in excess of ten pounds for each pound of U_3O_8, although buyer may, from time to time, publicly announce that, for limited periods by written agreements with individual producers, V_2O_5 in excess of ten-to-one will be paid for. Any such announcement will be made by posting a notice to this effect at the Monticello depot and through such other channels as are deemed suitable to achieve maximum dissemination among producers. Excess V_2O_5 shall be deemed to be buyer's property.

(3) *Allowances.* (i) A development allowance of $0.50 per pound U_3O_8 in ores assaying 0.10% U_3O_8 or more in recognition of expenditures incurred or

likely to be incurred in the development or exploration necessary for maintaining and increasing developed reserves of uranium ores. Fractional parts of a pound will be paid for on a pro rata basis to the nearest cent.[1]

(ii) A haulage allowance of 6¢ per ton mile for transportation of ore paid for under §§ 60.5 and 60.5a from the mine where produced to the purchase depot specified by the Commission, up to a maximum of 100 miles. The haulage distance from the mine to the purchase depot will be determined by the Commission and its decision will be final. Tonnages for purposes of this allowance shall be calculated on the basis of natural weights rather than dry weights.

(4) *Adjustment of assays.* Assays shall be adjusted to the nearest 0.01 percent for purposes of payment.

(b) *Quality and size.* Ores will not be accepted by buyer under §§ 60.5 and 60.5a which, in buyer's judgment:

(1) Contain less than 0.10 percent U_3O_8;

(2) Contain more than three parts of lime ($CaCO_3$) to one part of V_2O_5, or a total of more than 6 percent lime in the ore;

(3) Contain impurities deleterious to buyer's extraction process or for any other reason are not amenable to it;

(4) Contain lumps in excess of twelve inches in size.

NOTE: The Commission will be interested in discussing arrangements for delivery to it of types of uranium-bearing materials other than those for which guaranteed prices have been established, such as tailings, mill products, and ores of types not acceptable under §§ 60.5 and 60.5a.

(60 Stat. 755–775; 42 U. S. C. 1801–1819. Interpret or apply sec. 5, 60 Stat. 761, 42 U. S. C. 1805.)

Effective March 1, 1951, through March 31, 1962.

Dated at Washington, D. C., this 26th day of February 1951.

By order of the Commission.

M. W. BOYER,
General Manager.

[F. R. Doc. 51–3190; Filed, Mar. 12, 1951; 8.45 a. m.]

[Amended—F. R. Doc. 53–8782; Filed, Oct. 15, 1953; 8:45 a. m.]

Chairman DURHAM. We have with us this morning Senator Barrett and Congressman Thomson.

Do you care to make a statement at this time, Senator?

Senator BARRETT. Mr. Chairman, I would like to make a very brief statement. I anticipated I would make it after the Governor of Wyoming made his statement, but if you prefer I can make it now.

Chairman DURHAM. That is up to you. You may do as you wish.

I felt most of us around here were busy and I thought you would probably like to go back and do some work.

Senator BARRETT. I do, Mr. Chairman. I would first like to present Gov. Milward Simpson. I understand he is the next witness this morning. Governor Simpson is here and ready to testify. He must leave to go back to the governors' conference at Colorado Springs.

I might say that Governor Simpson has been working on this problem as far as Wyoming is concerned for a long time. He has made several trips around the uranium area in our State and he is intensely interested in the situation and he is down here representing the State of Wyoming.

I think he has Mr. Roy Peck, who is generally known as "Mr. Uranium" in our State, who is going to sit with him and help discuss the matter from Wyoming's standpoint.

I would appreciate it if you would let him make his statement at this time.

Chairman DURHAM. Thank you very much, Senator.

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[1] Amended—F. R. Doc. 56–6751; Filed, Aug. 21, 1956; 8:45 a. m.

Governor, we are glad to have you with us this morning. Will you please come around.

You may proceed with your statement.

STATEMENT OF HON. MILWARD L. SIMPSON, GOVERNOR, STATE OF WYOMING

Governor SIMPSON. Thank you, Mr. Chairman, Vice Chairman Anderson, and members of the committee.

I might preface what I am going to say in my prepared statement by telling you that the interest of the State of Wyoming in this matter has been stimulated. Our legislature meets out there biennially. At the last session of the legislature we readied ourselves to assist the Government for the expected onrush of uranium exploration. As a result we are contemplating great expense in the building of roads to the areas with the expectation of more if milling capacity is increased.

Then, too, we have adopted a new mining code which enables us to place more inspectors in the field because of the great increase in the uranium production.

As you so appropriately said yourself, Mr. Chairman, in the February 19, 1957, hearing, "the boys in the West went out and did a good job in their support of AEC. I hope your interest will continue."

Our interest was accelerated then. Up to the time of the speech of Jesse Johnson, on October 28, 1957, we made vast additional capital outlay in that area.

I might explain to the committee, I am sure most of you know, that Wyoming is the eighth largest State in the Union. We have some 97,500 square miles of territory. We have a mean altitude of 6,500 feet and we have a population of about 325,000. It is referred to as the land of high altitude and low multitude.

In that area and in central Wyoming where the greater proportion of the uranium reserves are located, we have had a problem that I will develop here.

I might say of necessity there will be some repetition of what Mr. Weller has said.

It is a privilege to appear before the Joint Atomic Energy Committee to discuss a matter of vital and immediate importance to Wyoming. With me are outstanding Wyoming representatives to present facts and figures of the uranium industry in Wyoming. I will leave the presentation of statistics largely in their capable hands. Suffice it to say that I am fully cognizant of the information to be presented. I have visited the uranium fields of Wyoming, observed the operations, and am tremendously impressed with the problems and needs these figures show.

My interest in the growth and progress of the uranium industry, as it affects Wyoming, has been of long standing. Trips into the Gas Hills, Crooks Gap, Pumpkin Buttes, Little Mountain, Copper Mountain, and Baggs area of Wyoming prior to exploration and subsequent thereto, have brought to my realization the astonishing proportions to which this industry has grown in the short time since the first discovery in Wyoming in 1953. From that time, I have been in close contact with the leaders of the industry and have gained a clear understanding of

their problems, the greatest of which is the market for their vast ore reserves. Wyoming is second in the Union in reserves, which can be conservatively estimated at 20 million tons. The distressed conditions of the industry and the economy of the areas affected, which can only be alleviated by the granting of additional milling capacity, is our first and paramount concern.

Faced as we are with the dire need for uranium in this atomic age, the Federal Government originally called on the citizens of this country to prospect for and find uranium. Responsible individuals and business organizations thereupon undertook extensive exploration and discovered uranium to an extent never contemplated. Wyoming is not only second among the States in uranium reserves, but with respect to the cost of production and assurance of long-term sustained yield, it is without equal in the Nation.

I might add that our grade of uranium is about 0.25. This is twice as high in content as the Canadian uranium and that from South Africa.

Senator ANDERSON. You understand that the people of New Mexico would put a slight question mark after that, but that is only natural.

Governor SIMPSON. I can readily understand that, sir. I have a cousin who is interested down there and I know the vast deposits and the exploration there now.

Oddly enough, Wyoming's granted milling capacity is exceeded by other States which do not possess anywhere near the same reserves. Wise conservation of our natural resources demands that minerals be extracted as efficiently and economically as possible. Wyoming cannot endure a high grading of its priceless mineral reserves, reserves whose exploration has barely commenced. Tremendous sums of money have been invested and an entirely new phase of economy has been established in Wyoming on the basis of these minerals discovered up to the present time. Only through adequate milling capacity can Wyoming attain the development of its uranium resources, relieve the distressed economic conditions in the affected areas, and keep faith with business investments already made.

My faith in the uranium industry is bolstered by a statement made by Dr. Paul F. Genachta, director, Atomic Energy Division of the Chase Manhattan Bank, delivered in a speech at the National Western Mining Conference in Denver, Colo., February 6, 1958, which is as follows: "Closing our remarks on fusion, let us emphasize that it is safe to dismiss it completely from our minds for quite a number of years and therefore let not future potential 'ifs' affect and distort our outlook on fission. We all know that what makes atomic energy from fission (uranium) so vitally important is that it is a new source of usable energy representing many times, probably 20 to 50 times, the combined energy reserves known to exist in coal, oil, and natural gas." I wholeheartedly concur in his thinking.

To illustrate the economic havoc wrought by the slowdown in the purchase of uranium concentrates, more than 1,000 men were employed directly by the uranium industry in Fremont County alone during the months of August, September, and October, 1957. Computed on an annual basis, this meant a payroll of $4,200 (representing income tax to the Federal Government of something over $1 million). As a result on the "uranium slowdown," industry employment dropped to 300 men, with a payroll of approximately $1,260,000.

In addition to the loss in income taxes, and other local, State and Federal taxes, most of those left unemployed are drawing unemployment insurance payments.

It is apparent that employment would return to its 1957 high if the industry could expect an adequate market for its product. Exploration would be started again, and additional overburden stripping and mining would be resumed. A large segment of the industry is standing by now waiting to see if it will have a market. Many mining operations have been limited to a trucking operation because of a curtailed market. In some instances mines have stockpiles of from twenty-five to fifty thousand tons. There is no reason to mine further while stockpiles are shipped under restricted quotas.

I plead a hardship case for Wyoming. If the country as a whole is in a "pump priming" condition, it would require, in Wyoming, only the opportunity to expand our existing economy in a reasonable manner. We ask for no subsidies. The investments of many of the operators whose capital developed the uranium industry in Wyoming are in grave jeopardy. Many of these pioneers in the industry, who invested these tremendous sums of money, face bankruptcy unless uranium production is revived by an increased market. It is impossible for these companies to leave their ore in the ground indefinitely because they must have a return on their invested capital. If companies mine under such restricted quotas, they will be forced to "high-grade" their properties in order to obtain their capital investment. Many millions of tons of comparatively low-grade ore in the 0.10 to 0.20 of 1 percent U–308 category would be forever wasted. Under the present restricted milling program, a high percentage of Wyoming's (and the Nation's) valuable uranium reserves will be lost. It would not be economical to go back into the ground at a later date for the low-grade reserves. As a matter of fact, much of the low-grade, if not salable, would end up in the tare pile.

I have made a notation on my statement to cite the hardship cases. I have pointed out the problems of unemployment and stockpiling. I refer to the trucking industry. Some in the trucking industry have equipped themselves with things like hoists, draglines, tractors and trailers, loaders, caterpillars, patrols, etc. that will be needed. I know the operator of a Wyoming trucking company who invested in thirteen elements for his industry, just so they could handle the shipments from the Gas Hills and the Crooks Gap area, costing in the neighborhood of $300,000. He is going broke and his loans are being called in. He is a prudent operator, but he took a chance in this uranium industry.

Another case is in the drilling rigs. There were some 47 drilling rigs in the Gas Hills and Crooks Gap area alone. They are all stacked up and lying idle in Riverton, approximately 35 miles from the uranium fields.

The same is true of contractors with firm commitments, and who contracted with many of the people there. They also are now idled by the sudden cutback by the AEC.

The same is true of the technicians. Consulting geologists and other experts have gone into private business, thus depriving the industry of their valuable assistance. Their future plans as a result are tenuous.

Senator BARRETT. Governor Simpson, these people that are engaged in the trucking industry and also in the drilling industry have large loans on their equipment and they have payments due every month and they find themselves in a very embarrassing position as a result of the curtailment of the AEC. Is that right?

Governor SIMPSON. That is true. One in particular I happen to know. I have been in the area and I talked to them. I know one in particular who has notes due and payable—$180,000 on his equipment. He is going to lose his equipment. There is no question about that. The banks are going to call it in.

You are correct, sir, in your conclusion.

Then, of course, the schools and the general economy of the area are adversely affected. By and large the employment situation in Wyoming, Mr. Chairman, is fairly good. In this particular area, however, it has sloughed off to a place where the damage done in Fremont County alone, is very pronounced, all because of the slowdown in the Crooks Gap and Gas Hills area.

There is over $2,600,000 of equipment that is idled in the field in both these areas. Our capital investment to date has been in the neighborhood of $25 million and would be $15 million more if additional milling capacity were granted.

Let me pause here to make to the committee this invitation: I am hopeful and I think this matter of such transcendent importance—that the committee can come to Wyoming, especially the area in central Wyoming. If you can come, we will not only show you the territory affected, quickly and efficiently, but we will make every provision for your comfort and well-being. Not only have we core-drilled, but more than that, we have taken off millions of tons of overburden, leaving the ore exposed. One pit is 650 feet deep.

According to the AEC, and other uranium experts, the nation's present reserves of approximately 70 million tons comprise only enough ore to meet the 10-year requirements of the military. Apparently no program has yet been established for the peaceful uses of uranium. By 1959 we will be depleting this reserve at the rate of about 7 million tons of ore per year. If we are to maintain an inventory of proven reserves for future peacetime uses, this 7 million tons should be replaced each year through exploration.

Such exploration will not be realized unless markets are increased. In Wyoming, most companies now have adequate proven reserves blocked out to satisfy their immediate needs. They cannot afford to block out further reserves, or explore them, if there is no market. Exploration has already advanced in Wyoming far beyond the present requirements of authorized milling capacity.

Almost all of the investment in the Wyoming uranium industry has come from risk capital provided either by private individuals, in a few instances by leading institutions, or by the sale of stocks to the public. Great losses will be suffered if additional milling capacity is not granted. This risk money was invested with the understanding that a market would exist. These people could not have misinterpreted the AEC policy which guaranteed a market for uranium ores.

Many major pieces of mining equipment have been virtually idled by the slowdown. There is probably upward of $2,600,000 in equipment idled by the lack of market.

Capital investment in mining and milling in central Wyoming is now about $25 million. Additional milling capacity would add another $15 million.

The uranium industry, until very recent months, has felt that the AEC was inducing it to continue the search for ores, and had promised them the right to mill these ores, with a market for the concentrate. Broad hints were passed out as much as a year ago that a slowdown might be coming, but this only served to speed the race for mills and cause tremendous investments of capital in 1957 to provide milling capacity for Wyoming ores. Companies continued to negotiate with the AEC at Grand Junction well into the fall of 1957 (and I might inject here, even after the speech by Jesse Johnson on October 28, 1957, they were still allowed to negotiate), with no hint that they did not have a good chance of getting a mill if their negotiations met AEC requirements. The cessation of negotiations with these companies by the AEC was without warning, and the companies have been left dangling without positive word on what their chances for a mill might be.

In Canada, I see in a recent national magazine, they gave them a 9-month warning period. No warning was given to the uranium producers in America.

Certain inducements such as the uranium bonus and the development allowance, the DMEA program, and so forth, are still in existence. But unless market is provided many companies may never have the opportunity to use these allowances, thus placing them in an unfavorable position to compete marketwise at a future date when marketing may be better. We need more milling now.

After a careful and complete study of all the facts surrounding the problem of the uranium market in Wyoming, it is my inescapable conclusion, as well as that of the Wyoming Natural Resource Board, that our uranium industry has been placed in a real hardship position. (And I want to add here that the Wyoming Natural Resource Board is the product of the mind of your Senator Barrett, who, as Governor, set up that splendid board, and they have testified here in January before the AEC.)

Senator BARRETT. Governor, if you will yield here at this point. Byron Wilson, the president of that board, told me he prevailed upon you to come down here and make a case for the board and for Wyoming, and we are very thankful for your appearance.

Governor SIMPSON. He could have done much better, but I am glad to pinch hit for him and I am glad to be here because I think it is of such transcendent importance that I should be here. As you know, Senator, our Natural Resource Board is most active and efficient.

To continue, our uranium industry has been placed in a real hardship position. However, it is our considered opinion, borne out in part by consultation with the Atomic Energy Commission, that the Commssion recognizes the unique and tragic hardship condition existing in our Wyoming uranium industry today.

In light of these facts, and these conditions, I should like to propose, for the industry of our State, that the Atomic Energy Commission resume negotiations of contracts for additional milling with our Wyoming companies. I should further like to request that the Atomic Energy Commission grant to the State of Wyoming, as an interim

solution to our pressing problem, an additional milling capacity of at least 2,000 daily tons. This request would meet only present minimum needs. As the picture changes further, we should be granted the further capacity justified by our vast uranium reserves.

I might say here that our inferred reserves are 20 million tons. With new discoveries coming on apace in southwestern Wyoming, processed by the Trace Minerals in Colorado and those around your hometown of Lusk, Senator, and in Shirley Basin of the Pumpkin Buttes area and the northwestern part of the State which ships to Edgemont, the industry tells me there is every assurance that our reserves will reach 40 million, or double the present proved reserves. The inferred reserves have been tested by core drilling and the exposed open pit.

The State of Wyoming wishes to solve its problem on a reasonable basis that will be satisfactory to our industry, our State, and the needs of the United States Government. We need a solution now. We urgently request a quick solution of our problem before complete paralysis sets in and one of Wyoming's greatest industries is permanently crippled.

Chairman DURHAM. Thank you very much, Governor, for making your statement outlining your case.

In the stockpiling in the past 20 years I have seen industry threatened like this, such as the tungsten industry.

Now, we have foreign operations getting preference to the United States. It seems that the Government will just not adopt a sound mining and minerals program. It is not proper and it is not right.

I think something should be done about it.

Senator Barrett, did you want to make your statement now, or do you want to ask him some questions, Senator Anderson?

Senator ANDERSON. I referred a moment ago to the advisory committee on raw materials in AEC. That was set up in October 1947. It is listed in the semiannual report of January of this year for Thorld F. Field, a consulting mining engineer from Duluth, Minn.; Francis C. Grary, technical adviser from New Kensington, Pa.; J. K. Gustafson, consulting geologist from M. A. Hanna Co., of Cleveland, Ohio; Ernest Rose, Koppers Co., of Pittsburgh; Walter O. Snelling, research chemist in Allentown, Pa.; Orville R. Whitaker, consulting mining engineer of Denver; and Clyde Williams, president of the Battelle Memorial Institute of Columbus, Ohio.

As a westerner from a State that has quite a little ore, second to New Mexico, do you feel it would be possible to find at least one other person beside Mr. Whitaker out of the West to look at this raw materials problem, and could we not profit by suggesting to AEC that maybe this advisory committee that was appointed in 1947 be shaken up a little bit to indicate the recent discoveries in the uranium field?

Governor SIMPSON. With respect to the uranium industry we are not even represented in it. That is evidently coal and iron ore, but I certainly agree with you, sir. Certainly there should be better representation than that. That committee membership is outmoded.

Senator ANDERSON. I would think so. The great reserves are out in the West. You and I know, they thought the Colorado Plateau in one particular area had it all and pretty soon they began to find other ore.

But a committee to look at raw materials most assuredly should

have some people from the Uranium Institute and other people of that general nature.

Governor SIMPSON. I doubt very seriously that that committee would be of any assistance to the AEC.

Senator ANDERSON. I do not know these men. They may be the finest men in the world, but if you were to send a man out to judge horse racing you would not get somebody that had been raising honey bees. These men have a background and all that, but I do feel something should be done along that line.

Governor SIMPSON. I concur in that.

Senator ANDERSON. Some time ago I introduced a bill and I believe Mr. Durham introduced a bill to provide for the stockpiling of uranium on the theory that if we got into bad difficulties worldwide, which we hope we will not, and had enormous need for small weapons that could be put into missiles, that process would be very costly in uranium.

I almost said "wasteful of uranium," but what I really mean is that uranium gives a far bigger bang in a multimegaton bomb than it does in a small weapon; therefore, we might use things up at a rapid rate.

Would you not think that since uranium can probably live without deteriorating a few thousand years it might not be the worst investment in the world to stockpile a little of that?

Governor SIMPSON. I agree with that. The thing that hurts us is excessive stockpiling with no milling capacity.

Senator ANDERSON. I do not mean just to stockpile the raw materials; I think if you are going to get into trouble you want some yellow cake.

Governor SIMPSON. Yes, sir; that is what I mean too. A new missile base is contemplated for Cheyenne, Wyo. I take it that certainly fission is going to play an important part with respect to that project.

Chairman DURHAM. I do not think there is anything wrong with stockpiling U–235.

Senator ANDERSON. I do not, either. The only thing I am trying to say is that I do not think uranium is going to be much cheaper in the future. I would rather have money in uranium which might be very essential to our defense than to have it in gold at Fort Knox.

Governor SIMPSON. Yellow cake is gold in the bank.

Senator ANDERSON. I am happy to have you think we might make a venture in that direction.

Governor SIMPSON. I find myself quite often concurring with you.

Senator ANDERSON. You remember in World War II the Department of Agriculture had a great supply of wool. How long did it last? Just overnight every military service rushed in to take it all because they all thought they would need all the uniforms they could get. They had to apportion it out, and so forth.

The result was that wool prices went sky high if you remember. I do not object to that. I merely point out that if we got into another serious situation that needed an awful lot of uranium in a hurry, uranium prices could go up and the Government might pay a lot more for this than it would if it mined it in a regular fashion based on what it has discovered in various parts of the country and particularly on the discoveries in your State.

Governor SIMPSON. I think that is a good statement because we can't be careless of our security. The chances are 50–50 that we can

have a shooting war and it won't be the kind that we have had in the past.

Senator ANDERSON. When we do we will need lots of uranium in a hurry.

Chairman DURHAM. I think in 1939 those of us who were around here found ourselves in a predicament with no strategic material above the ground, and we did not have a tungsten mine in this country; we did not have dozens of other types of minerals; we adopted a policy and set up a stockpiling act. It has been the policy of Congress.

Governor SIMPSON. I know all those companies out there. I was born and reared in Wyoming. I know the prospectors in the uranium areas, as well as the smaller operators. You know everybody in a State with that small a population. I know the small operators are going to the wall with their custom ore, because they have no milling capacity to process it. I know that the big companies haven't had a cent of return on their capital investment, because there is inadequate milling capacity. In conclusion, again let me extend a cordial invitation to the committee to inspect our Wyoming uranium fields.

Chairman DURHAM. The Defense Department and all the other departments have been up here pleading in the last few days that we have to amend the Mutual Security Act in order to stockpile minerals.

They have a policy on the other side, but not much of a policy on this side.

Congressman Thomson, do you have any statement to make?

We are glad to have you with us this morning.

STATEMENT OF HON. E. KEITH THOMSON, A UNITED STATES REPRESENTATIVE FROM THE STATE OF WYOMING

Representative THOMSON. Thank you. I have time before your committee tomorrow. I do not want to comment at length at this time except to express my pleasure at seeing the capable Governor of Wyoming.

By way of his qualifications I would tell the committee as a young man he was a miner himself so he has stayed abreast of it right along.

Also I would like to congratulate the committee for allowing this time in their annual hearing to go into the pressing problems of the mining end of the industry. I wish it were possible for me to stay here some of the fine statements, some of which I have received with Wyoming people in the industry, but other pressing problems require me to go take care of them, but I will be back tomorrow.

Thank you.

Chairman DURHAM. Senator Barrett?

Senator BARRETT. Thank you very much, Mr. Chairman. I would like to make a very brief statement.

Governor SIMPSON. Mr. Chairman, may I say again I want to reiterate the invitation. I think it is a matter of tremendous importance. If the committee should send a subcommittee or the committee come out, rest assured that wonderful Wyoming will take care of

every need and we would love to have you see that country. It is a fascinating thing.

I will say to you out there in the Crooks Gap and Gas Hills area which is a great sheep-raising country, formerly, now dotted with all these test holes and these great pits, that you will enjoy it like a dog chasing rabbit out there, way out in the country.

Representative DEMPSEY. Governor, I want to congratulate you on a very splendid statement and a very accurate statement and I thoroughly sympathize with the conditions existing in Wyoming because we have similar conditions in New Mexico.

Governor SIMPSON. Thank you, sir. I have talked with your Governor and I have talked with people interested in the industry there. I have a cousin who is interested in the industry whom you know, Al Simpson. That is why I approached mine from the general standpoint.

Chairman DURHAM. Thank you very much, Governor.

STATEMENT OF HON. FRANK A. BARRETT, A UNITED STATES SENATOR FROM THE STATE OF WYOMING

Senator BARRETT. I would like Governor Simpson to sit with me while I testify.

I appreciate the opportunity to appear before your committee this morning, Mr. Chairman.

I will be very brief. I know how busy you gentlemen are and I must leave for another meeting very shortly.

I am very interested in this problem. I have given a lot of thought to it and I know it is a very perplexing one.

Let me say this: That I certainly agree with Governor Simpson that we need more milling capacity and we need it now. The question is: How are we going to go about it to get the job done?

Now, it seems to me, Mr. Chairman and members of the committee, that we must start out with the premise that we are obliged to fill the commitment this country made with foreign powers to buy certain quantities of uranium concentrate for a number of years.

No. 2, some talk has been made that maybe we could enter into a negotiation with Canada and these other countries and pay them a lump sum and cancel the contract. I do not think that is the proper approach at all.

Other proposals have been made that we authorize enough mills to adequately dispose of a sufficient amount of ore but stipulate that they cannot go into production until after 1962.

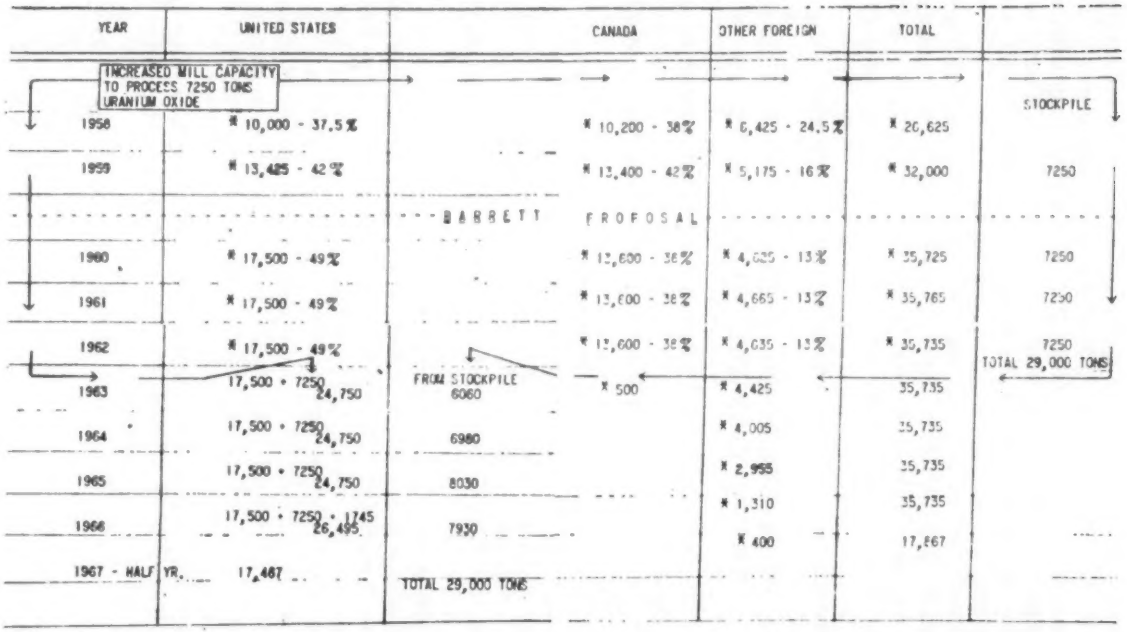
Now, the way I see it, AEC and the United States Government is obligated to the miners of this country. The miners relied on the promises of the officials of the AEC that it would take their ore if and when they discovered and produced it provided it was suitable ore.

They went out and spent their money and a lot of time and now they find themselves in the embarrassing situation where they have the ore on hand and they may well go broke after they have discovered the ore and are ready to produce it.

Now, my idea is that we have to enter into a stockpiling arrangement. You have before you the graph that I prepared to indicate clearly my proposal.

(The graph referred to follows:)

A. E. C. -- URANIUM OXIDE REQUIREMENTS



IF IN 1958 THE A.E.C. AUTHORIZES MILLS TO PRODUCE URANIUM OXIDE SUFFICIENT TO COMPENSATE FOR FOREIGN CONTRACTS EXPIRING IN 1962 AND THEREAFTER STOCKPILE AN AMOUNT EQUAL TO 1/2 OF FOREIGN PRODUCTION FOR FOUR YEARS PRIOR TO 1962, AND PROCESSING FROM STOCKPILE DURING FOUR YEARS THEREAFTER, THE AUTHORIZATION OF MILLS TO PROCESS 7250 TONS OF URANIUM OXIDE WOULD REQUIRE ABOUT 8300 TONS OF ORE DAILY CAPACITY.

* STATISTICS FURNISHED BY A.E.C.

Senator BARRETT. Let me tell you that the figures with the asterisks before them are figures that have been supplied to me by the Atomic Energy Commission people themselves. Those are their own figures.

I want to call your attention to the fact that according to the estimate of the AEC it will take 35,735 tons of uranium oxide to meet the needs of this country after 1960.

Jesse Johnson told me that so far as he knows, there is no reason to believe that the requirements will go below that figure, but of course the requirements might well exceed that figure.

So I have projected that figure from 1962 to 1966 and kept that same figure.

Now, the question is: What are we going to do about this matter?

It seems to me that we have to stockpile some ore for the next 4 years and then feed it into the AEC system for the 4 years after 1962.

It seems to me that the best way to get at this problem is to find out just how much ore is committed to foreign producers and determine the amount of ore supplied by foreign producers under contracts that will expire after 1962.

I find that if you take those figures given me by the AEC that Canada is presently supplying us about 10,200 tons and by 1962 will supply 13,600 tons. That is to all intents and purposes the termination date on Canada's contracts.

Contracts from other sources, the Belgian Congo, and Africa terminate a little longer after 1962, but the total amount of uranium oxide that comes from foreign powers and under contracts that will expire after 1962 and up to 1966 amounts to 14,500 tons annually.

Now, in order to settle this matter, it seems to me that the proper approach is for the AEC at this time to authorize mill capacity that will produce 7,250 tons of uranium oxide annually.

Now, that is just dividing the 14,500 tons in 2.

Now, then, I would take that 7,250 tons and put it in the stockpile commencing at the end of next year and by the way that would be the earliest any of it would be available, and carry it along in 1960, 1961, and 1962, and then you would have a total of 29,000 tons in the stockpile.

Starting on January 1, 1963, I would take that stockpile and feed it right back into the AEC system as indicated on the plat, 6,060 tons would go to the AEC for processing 1963 and 6,980 in 1964, 8,030 in 1965, 7,930 in 1966, and by that time your entire stockpile would be liquidated.

Now, you still have your mills producing 7,250 tons and you feed that into the AEC plants and instead of 17,500 that is being processed in 1962, you would have 17,500 plus 7,250, or 24,750 tons.

And you would take from the stockpile 6,060 and 500 from Canada, 4,425 from other foreign sources, and you still have your same figure of 35,735 total annual uranium oxide production.

So we are not asking the AEC under this plan to increase the amount of uranium oxide that it will need between now and 1966.

Now, it seems to me, Mr. Chairman, that if you do this, certain results will follow:

Number 1, the AEC will have a stable supply of uranium oxide available to them. It will have enough to meet all of its commitments.

It will be in a position to authorize mills that will produce 7,250 tons of uranium oxide a year and that will require milling capacity of 8,300 tons a day.

Now, if we do that we can meet the commitments that have been made to the uranium miners of this country.

I would say that I certainly agree with Governor Simpson that we ought to have at least 2,000 tons additional milling capacity in Wyoming, but we need twice as much as that to really take care of the present situation.

I think that the minimum of milling capacity that should be authorized now should be 3,000 tons a day.

So the upshot of this, Mr. Chairman and members of the committee, is that if the AEC will follow a stockpiling plan along this line and stockpile for the next 4 years and the feed it back into its system during the next 4 years, the entire stockpile will be liquidated in 1966 and we will meet all the obligations to foreign powers.

If we do this we will save the domestic uranium industry from severe losses, to say the least.

Whether any of the uranium people will be forced into bankruptcy or not, I don't know, but in my lifetime I have seen people go out and drill oil wells and get production and go broke because they couldn't sell their oil.

That is precisely what is happening to a good many fellows in the uranium mining industry today. They have the ore; they spent their money; they are in debt and they cannot get rid of the ore. They are going broke in the process.

It does seem to me in fairness and equity the only thing to do is for the AEC to stockpile these ores for the next 4 years and then liquidate them in the following 4 years.

The only thing they are going to be out is the interest on the money that is put up from January 1960, to January 1963. That is the only loss that the AEC would have, to keep the promises, and commitmentsments, made by their duly authorized officials.

Chairman DURHAM. Did you run it out in dollar costs?

Senator BARRETT. Yes, I did, Mr. Chairman. It would run about $5 million total. It would cost $5 million in interest.

The reason for that is that the first ore comes in about January 1, 1960, and the last ore will be coming in the last of 1962 on which there will be very little interest involved.

Assuming it cost five or six million dollars, after all, the United States Government gave its word to these people and it ought to keep it.

Now, that is a fundamental doctrine that all of us can agree on.

Now, too, $5 million is a relatively small amount of money compared to the amount of money that the AEC is spending on the acquisition of raw material sources every year. It was around four hundred million dollars a year in 1956 and it will be much higher this year.

The question is this: Who is going to take the loss? Are you going to ask these miners who went out in good faith and relied on the promises made by the AEC or are you going to ask the Government to assume the loss?

Now, I hope you do something about it. I know that this committee is going to give very serious consideration to this problem. I am

sure that the Atomic Energy Commission will listen to advice and counsel from you.

But let me say this: I feel so deeply about this matter that if that $5 million of interest is a deterrent and if you feel that the Atomic Energy Commission should not stand all of the interest, then go ahead and divide it and make the miners assume half of it.

I think they would be glad to do it for otherwise they will be sunk if something is not done about it.

I thank you very much, Mr. Chairman.

Chairman DURHAM. Thank you, Senator Barrett.

Senator GORE. Senator Barrett, you said the Government had given its word to the people in this regard. Is that a definite commitment, or a moral commitment arising out of the announced policy?

Senator BARRETT. I would say that it is an implied commitment. I would not say that there is any statute that you could refer to or even that there is any assurance give in the form of a resolution by the Atomic Energy Commission itself, but I will say this: that spokesmen for the Atomic Energy Commission issued statements not once, but hundreds of times, and if you desire I will document them and supply them for the record, wherein they urged the miners to go out and produce the ore and they told them there would be a ready market available for the ore if and when they produced it and that the price of the uranium oxide would be so much after 1962 and until 1966.

To answer your question, I think it would be only fair to say that there is nothing definite and specific in the form of an outright commitment, but there certainly is strong language that would justify any reasonable man saying that there was an implied commitment and that they intended it to be so and that the miners relied on it.

Governor SIMPSON. Then in keeping with it, they went into exploration and the Government urged, continued to urge, at least they never sought any cutback from it.

Senator ANDERSON. Did not the Government have a bonus system? Does that not indicate they wanted extra? You do not put a bonus on it, on something when you are trying to stop it.

Senator GORE. I was not undertaking, Senator Anderson, to minimize the nature of the understanding that had prevailed. I am trying to specify and pinpoint the nature of that understanding.

Now, Mr. Ramey has given me a notation here of the press release of 1956 in which the details concerning plans for the purchase of uranium concentrate through December 31, 1966 were given public notice.

So, Senator Barrett, I take it that it is your view that these repeated public statements implied, in fact stated, a program upon which a moral commitment was implied if not specifically made.

Senator BARRETT. The Senator is exactly correct. I could document it. I am prepared to do it, Mr. Chairman. I do not have the evidence with me today, but I do have it in the office. I do not think there is any doubt about it. I do not want to imply any bad faith on the part of the officials of the Atomic Energy Commission particularly on Mr. Jesse Johnson. I do not mean to do that at all.

I think Mr. Johnson acted in good faith at all times but I think these assurances were given and they were relied upon and now we are in this embarrassing situation we find ourselves in today.

Senator GORE. Finding ourselves in the situation of having large supplies of uranium to which you refer, you do not think that the Government can arbitrarily change its policy without due regard to its effect upon the mining industry and upon the many individuals who acted upon the implied obligation?

Senator BARRETT. That is exactly right, Senator.

Senator GORE. It was in consequence of this that the Subcommittee on Raw Materials informally suggested to the Commission that it make a survey of the effect of this change of policy upon the industry and that it withhold the making of any commitments beyond those presently in effect, beyond 1962, until this report was made.

Senator BARRETT. I am glad that you brought that up. I know you are working on that matter Senator Gore. I have discussed the matter with you. I appreciate also the fact that you are going to hold hearings a little later on.

Governor Simpson said before you came in that he hoped you would bring your committee out to Wyoming because we think that we are in the worst shape of any State in the Union as far as this uranium industry is concerned. We think we are in a terrible fix and that is all there is to it.

Senator GORE. I had the pleasure of talking to some of your people out at the Denver meeting. I know of no reason why the subcommittee cannot comply with the request of Mr. Weller and the Governor to hold some hearings in the actual area most directly affected unless it be our pressing schedule here.

As you know, we may find by May that every day is full here, but I shall undertake, with the permission of the chairman of the full committee, and the schedule here permitting, to comply with your request, Governor, and Mr. Weller.

Chairman DURHAM. We will be glad to do it, Senator.

Senator GORE. One more question, and then I will yield to my friend from Pennsylvania.

Do you think, Senator, that the Congress could well consider a stockpiling problem on the additional grounds that it would provide a needed stimulus to the economy on the Colorado plateau at this time?

Senator BARRETT. Senator Gore, I said this: I inquired from Jesse Johnson, he told me that beginning in 1960, that the AEC requirements for uranium oxide would be 35,735 tons a year and that he did not know of any reason why that figure would be decreased in the succeeding years up until 1966.

So in the plan that I am proposing here, I have not gone above the estimated needs and requirements of the AEC but have worked out a plan whereby the AEC can authorize mills to process 8,300 tons of ore a day and still not produce any more of yellow coke than will be needed until 1966.

Senator GORE. What I am asking you here is: Would a stockpiling program have the additional virtue of giving employment to people who are now unemployed?

Senator BARRETT. No question about it.

As our Governor has said——

Governor SIMPSON. It went from 1,000 employees, Senator Gore, when this slowdown occurred, in that one area alone in central Wyoming, Crooks Gap and Gas Hills, down to 300. The payroll went from $4,600,000 down to $1,020,000.

Senator GORE. Thank you, Mr. Chairman.

Representative VAN ZANDT. Senator, have you discussed the Barrett proposal with the Commission?

Senator BARRETT. I certainly have. I might tell you that I have not received too much encouragement from them. I will be honest with you about that, although Jesse Johnson is not unfriendly to some such proposal.

I know they are looking for some way out. Some people have proposed we pay Canada so much money in a lump sum and cancel their contract.

The State Department probably would not think of that.

Also, someone suggested that the AEC issue these mill certificates now but stipulate that the mills may not go into production until 1963.

Well, of course, these people will be idle in the meantime and there would not be any market for their ores and they would probably be broke by 1963. So that is not feasible.

Representative VANZANDT. Does it not narrow down to this: they are giving preference to foreign investment at the expense of the American investor and stockholder?

Senator BARRETT. Congressman, you are exactly right.

Let me call your attention to this fact, too, which is rather surprising to me: During the past 2 years you will find, in the annual report of the AEC, that the cost of domestic uranium has gone down 10 percent; the cost of foreign uranium oxide has gone up 2 percent.

Still the foreign producers are getting all the breaks. And they are producing from low-grade ore.

Of course, that probably accounts for the fact that their costs are higher in Canada, I assume.

Chairman DURHAM. Governor, could you give the committee the actual cost at the present time in unemployment funds from the State and Federal Government? Could you supply it for the committee?

Governor SIMPSON. Yes, I can, sir, if I may have the privilege of procuring that and sending it to the chairman.

Chairman DURHAM. We will put it in the record.

Governor SIMPSON. Thank you, sir; I will do that (see p. 56).

Senator GORE. Mr. Chairman, I have another question.

Chairman DURHAM. Senator Gore.

Senator GORE. Senator Barrett, and Governor Simpson, is not the future of the uranium industry tied in a very real way to the future development, expeditious development, of atomic power in the United States?

Senator BARRETT. No question under the sun about that. In order to do that I think we cannot permit the mining end of that industry to be paralyzed at the present time. We have got to go along with these miners and keep them interested in producing the ore that we will need in the future after this program expires in 1966.

Senator GORE. And insofar as the international markets for either natural or refined uranium are concerned, it is very essential to the welfare of the uranium mining industry as well as to the uranium refining industry that our friends abroad develop the kind of reactors which will utilize the kinds of product we have.

Senator BARRETT. That is exactly right, Senator Gore.

Representative DEMPSEY. Mr. Chairman, may I ask a question?

Chairman DURHAM. Congressman Dempsey.

Representative DEMPSEY. Senator, I listened to your speech with concurrence until you say that Wyoming is the most distressed. I thought it was New Mexico.

Senator BARRETT. Governor Dempsey, you will have to argue that matter out with Governor Simpson.

Representative DEMPSEY. All right. I want to say this to you:

You suggested about $400 million was being used for the purchase of uranium. The request for this next year is between six and seven hundred million dollars and closer to seven than six.

Senator BARRETT. You are right; $670 million I believe is the exact figure.

Representative DEMPSEY. Right. At the present time we are paying to foreign producers $1.50 a pound for concentrates more than we are paying for domestic. That runs into about $50 million a year, so your stockpiling would be nothing compared to that.

Senator BARRETT. When I mentioned that $400 million figure I was referring to the AEC report which covers the fiscal years 1956 and 1957. But I agree with you that the current request is I believe $670 million.

Representative DEMPSEY. That is right.

Senator BARRETT. That makes this $5 million interest cost, a relatively small item in their overall program for requisition of this ore.

Representative DEMPSEY. I agree with you on the stockpiling. I think it is essential and very necessary.

Senator BARRETT. Thank you very much, Congressman Dempsey.

Governor SIMPSON. Mr. Chairman, may I just interrupt?

You asked for a figure. I resorted to my file here. May I give you the figure of the actual cost of unemployment in the area affected, in the Gas Hills and Crooks Gap areas? $32,902 is the current cost of unemployment.

Chairman DURHAM. That is monthly?

Governor SIMPSON. That is right.

Senator BARRETT. Thank you very much, Mr. Chairman.

Chairman DURHAM. Thank you, Senator Barrett, for taking the time to come over.

And Governor, we are glad to have had you with us too.

I believe our next witness is Mr. Roy Peck, representing the Wyoming Mining Association, Riverton, Wyo.

Is Mr. Peck here?

You may proceed with your statement, sir.

STATEMENT OF ROY PECK, COPUBLISHER, RIVERTON RANGER, RIVERTON, WYO.

Mr. PECK. Thank you, Mr. Chairman.

Mr. Chairman, members of the Joint Committee, my name is Roy Peck. I am representing the Wyoming Mining Association with headquarters in Riverton, Wyo. I regard it as a real privilege to have been chosen by that association to present their testimony here today.

On behalf of the Wyoming Mining Association I should like to express the appreciation of that association for this opportunity to appear before your committee and present to you briefly the development, growth, and present state of the uranium industry in Wyoming.

At this time I should also like to express the appreciation of the Wyoming Mining Association for the close cooperation extended it by Gov. Milward L. Simpson, who has appeared before you at rather great sacrifice of his personal time in that the western governors' conference is also presently meeting in Colorado Springs, and to our full Wyoming congressional delegation.

The Wyoming uranium industry, since its beginnings, has been confronted with steadily increasing market problems. These problems are so great at this moment that a great portion of the industry faces economic collapse and great financial loss unless milling capacity is granted.

The Wyoming uranium situation today may be summarized briefly as follows:

1. Tremendous ore reserves have been proven, far in excess of the amount of milling capacity available to process these ores.

2. Great sums of private and public risk capital have been invested in the exploration and development of ores.

This investment will be seriously jeopardized unless milling capacity is provided for the ores.

3. The Wyoming industry has been encouraged to reach its present stage of development by the directives, representations, actions, and inducements of the Atomic Energy Commission, who now denies it the opportunity to recover its tremendous investments in uranium.

Only through cooperation has the Wyoming uranium industry been able to reach the gigantic proportions of ore reserves it exhibits today. Our State has not had the benefit of the financial backing of the major mining companies in its development, it has rather grown slowly and constructively through the combined efforts of the original discoverers of the area in cooperation with a minimum amount of outside capital, with the help of what might be called medium-sized mining companies, and through considerable assistance from the Grand Junction office of the Atomic Energy Commission and its field staff in Wyoming.

A development such as ours has its blessings in that the status of the small independent producer has for the most part been preserved. But, it also has its handicaps because the only way the independent, with limited financial resources can survive, is to find his ore, sell as much as he can, and then explore ahead further with such profits or additional risk capital as he may have.

Thus while in some other uranium areas large major companies were able to carry out extensive exploration programs and prove out large bodies of ore without the necessity of selling any of that ore, somewhat the converse has been true in Wyoming. Therefore we have been a little late in arriving at the major position our ore reserves now occupy in the national industry.

The Gas Hills area of Wyoming, where a large majority of the State's presently known reserves are concentrated, was discovered in September 1953 by Neil McNeice, an amateur prospector from Riverton. The Gas Hills lies approximately 45 miles east of Riverton in central Wyoming.

Almost without exception the uranium pioneers and discoverers of the Gas Hills and other major areas of ore reserves are still active and holding management level positions in our industry.

I believe that the faith in the uranium industry as exhibited by our Wyoming uranium pioneers stands unparalleled in the history of ura-

nium. I am sorry that time will not permit the telling of some of the early hardships and frustrations these men overcame with dogged determination and faith in their industry.

A few months after the discovery of the Gas Hills, a second major area was found, the Crooks Gap area, about 30 miles south of Gas Hills. A little later in 1954 the Shirley Basin area about 150 miles east and south of the Gas Hills was discovered. Other promising areas were discovered in the quest for uranium.

It happens that I am a newspaper publisher and in August of this year we published a special edition of the Riverton Ranger which indicated the status of the industry at that time.

I have brought with me 25 copies of that paper which I think might be of some historical benefit for your files, and it will be made available to you.

Chairman DURHAM. Thank you.

Mr. PECK. I would like to point out, however, that our situation has changed since that time in relation to ore reserves, although even at that time we had enough ore reserves to justify the milling capacity that we now desire. That was 3 months prior to Mr. Johnson's speech.

The geology of the central Wyoming uranium deposits is considerably different than that of any other deposits in the Nation and it took a year or two to solve this problem. But once the nature of the ore became known, exploration soon uncovered tremendous reserves.

At first operators concentrated upon drilling to prove sufficient reserves to warrant mining operations and shipments were made to the AEC buying station at Riverton. But soon the ore began to flood the buying station and the AEC had to enforce a quota system in the sales of ore in the summer of 1956. The Riverton buying station was opened March 1, 1955, and until that time there was no market for the ore within economic shipping distance.

The Atomic Energy Commission, at the time it began to restrict its ore shipping quotas, indicated that instead of crude ore, it was interested principally in the purchase of uranium concentrates. A representative of the Commission appeared in Riverton before a group of the operators in July 1956 to outline this program. This same representative, David D. Baker, underscored this position at the Wyoming Mining Convention in April 1957, less than a year ago.

The central Wyoming industry reacted promptly and began an accelerated exploration program to block out sufficient reserves for mill proposals. Several proposals were submitted to the Commission at Grand Junction and negotiations for contracts started at that time.

Presently Wyoming has three authorized uranium mills. The Western Nuclear Corp. mill went on stream in July 1957, the Lucky Mc Uranium mill will go on stream in late February 1958, and the Fremont Minerals mill is just beginning construction.

Five additional contracts are presently under negotiation with the Commission. New mills have been proposed by Globe Mining Co.-Union Carbide Nuclear, Vitro Minerals Corp.-Lisbon Uranium, and by Federal Uranium-Gas Hills Uranium. Western Nuclear and Lucky Mc are proposing expansion of their present facilities.

Ore reserves in the State of Wyoming have been calculated to exceed 20 million tons in the indicated and inferred category, and from 30 to 40 million tons when the potential of the presently known districts is included.

In the proven, or measured and indicated classification of ore reserves, Wyoming has between 13 and 14 million tons, of which more than 11 million—11,030,000 tons, to be exact—have been calculated to be in central Wyoming. Proven reserves are those reserves which may be commercially mined, have a commercial grade averaging 0.20 of 1 percent U_3O_8, and have been blocked out by drilling on at least 3 sides with drilling spaced at 50- to 100-foot intervals depending upon the nature of the ore.

The State's ore reserves may be broken down geographically into three areas—that area in northeastern Wyoming whose market is provided by the Mines Development mill at Edgemont, S. Dak., southwestern Wyoming, whose market is provided by the trace elements mill of Union Carbide at Maybell, Colo., and the central-northwestern Wyoming area which includes the Gas Hills, Crooks Gap, Copper Mountain, flanks of the Wind River Basin, Little-Pryor Mountain, Shirley Basin, and other intermediate areas served by the central Wyoming milling complex.

Central Wyoming, where the major Wyoming uranium reserves are to be found, finds itself with less than half the minimum milling capacity needed to mill the proven ore of the area. Actually, under presently authorized milling capacity there is a 30 years' supply of known ore.

The northeastern and southwestern parts of the State are presently adequately served by mills, although new reserves would soon change this picture.

The central Wyoming area may be conveniently divided into two parts. The first part is the Gas Hills-Crooks Gap area where the largest ore-reserve concentrations in the State are to be found. The second part is that outlying area any part of which is a potential Gas Hills, but where there has been less exploration and development. This includes Copper Mountain, Little Mountain, Shirley Basin, and other areas in central and northwestern Wyoming.

Ore reserves in the northeastern and southwestern areas of the State are estimated to exceed 2 million tons. The central Wyoming area, then, contains the remaining 11 million tons of proven reserves.

Central Wyoming reserves may be broken down as follows: 7,530,000 tons of proven reserves in the Gas Hills, and 2 million tons of proven reserves in Crooks Gap, or a total of 9,530,000 tons of proven reserves in the 2 combined areas.

Reserves in the outlying areas of central Wyoming, principally in Shirley Basin, account for the remaining 1,500,000 tons of proven ore reserves in central Wyoming.

These ore reserves were proven long before the October 28 speech of Mr. Johnson. They were actually proven as early as July of last year and we are basing much of the thesis of our argument on the fact that our ore reserves which are much greater at the present moment have been proved for some time in the past.

The average grade of ore shipped so far from the central Wyoming area is about 0.23 of 1 percent U_3O_8. Ore-reserve figures used here contemplate a reserve tonnage of about this same grade.

In 1956—1957 figures are as yet unavailable—131,542 tons of uranium ores were sold in Wyoming with an average grade of just under 0.23. The 1957 figures are expected to be considerably higher.

On the basis of 18 million tons of ore, it would take a daily milling

capacity of over 5,000 tons per day to process this known indicated and inferred reserve in 10 years. These figures disregard the potential of the area where only about 25 percent of the favorable ground has been drilled. There is additional vast potential at greater depth in the area, and a huge tonnage of low grade ore in the 0.10 grade category that can be milled successfully.

It is clear that presently authorized mill capacity of 1,650 tons per day cannot hope to sustain the general Wyoming area where money has already been expended and which money can only be returned through marketing and milling of ores.

We have been assured that the Atomic Energy Commission recognizes the need for additional milling capacity in Wyoming, and is fully aware of its moral responsibility to the uranium pioneers of Wyoming, most of whom survive to this very day. We are confident that the Commission is not going to let us down, and we are fully aware that the AEC has a knotty problem to solve.

I would like to underline at this time that our problem needs solution now and while it is encouraging to hear that the subcommittee may come to Wyoming, we still hope that a decision or some indication of a decision may be made in advance of some time in April or May.

A few random statistics will indicate the present status of uranium in Wyoming.

A survey of the Gas Hills-Crooks Gap area reveals that at the peak of employment in 1957 there were 802 employed directly by uranium companies in Fremont County, Wyo., and an additional 215 employed in direct auxiliary industries such as trucking, drilling, contracting, and geologic services. This makes a total of 1,017 men employed in the direct industry at its peak in 1957. These uranium workers contributed an annual payroll of over $4,200,000. Employment is presently at a much lower level. Only about 300 men are now directly employed in the industry and about 50 in the auxiliary industry. The principal cause of this drop in employment within the industry has been the uncertain market condition with its consequent slowing to a near halt of mining and exploration programs.

The economic high of 1957 would undoubtedly be regained and topped were more milling capacity granted to the area.

Tremendous mountains of earth have already been moved in the Gas Hills and Crooks Gap where open-pit mining at low cost is possible. Since mining started, 6,726,827 cubic yards of overburden have been removed from open pits. In 1957 alone, 4,365,940 cubic yards were moved, much of this in premine stripping, indicating the tremendous acceleration of the Wyoming uranium mining industry in 1957.

About 485,000 tons of uranium has been mined with a value of about $10 million. That makes us a major uranium-producing area at this moment. Of this figure, 295,804 tons werem ined in 1957. More than a third of the ore mined is held in stockpiles because of the limited milling capacity.

Some underground mining is contemplated in the future. One company is mining in Crooks Gap at a depth of 265 feet with underground methods. It is too early to determine their exact mining costs. Incidentally, to illustrate the tremendous open pits of the Gas Hills, one company is now mining by open-pit methods at a depth of 162 feet.

Tremendous footages have been drilled in Gas Hills-Crooks Gap.

In 1957, 1,500,003 feet were drilled, and since the area was opened almost 4 million feet have been drilled.

The large amounts of money now invested in the central Wyoming uranium industry should be clear. This money for the most part has not been recovered and can only be done so through the marketing and milling of ores. The large sums of money expended in exploration, premine stripping, and mining were expended in good faith that there would be a market available.

Ore-reserve statistics indicate the justification for more than 5,000 daily tons of milling capacity. Our industry can now support this capacity for 10 years, and if the present exploration rate continues, the life of the industry will extend far beyond that.

But our Wyoming industry recognizes that a reasonable solution must be found that will stay within the bounds of the Commission's requirements for concentrates and still serve the interim needs of the Wyoming uranium industry.

This solution must be found now if a major segment of the Wyoming uranium industry is to escape economic disaster.

Our proven reserves in central Wyoming exceed 11 million tons. To mill this measured reserve in 10 years would require about 3,500 daily tons of capacity, or an additional 2,000 tons of milling capacity. This uranium reserve had been drilled out prior to November 1, 1957, and as has already been indicated, present proven reserve figures are greater than this and still growing.

The Governor of our State, in consideration of the best interest of the State as a whole, has suggested that our interim minimum requirements might be not less than 2,000 daily tons of additional uranium mining capacity.

The Wyoming Mining Association joins Governor Simpson in his search for a reasonable solution to its problem, a solution that cannot wait.

Thank you.

Chairman DURHAM. Thank you very much, Mr. Peck.

Are there any questions?

Senator DWORSHAK. I have one question.

Mr. Peck, we all sense the gravity of the situation out there affecting the uranium development and milling in Wyoming. As a member of this committee I have been plagued by the possibilities that we may have the same experiences we had through the purchase by the Government of tungsten over the past few years.

Under the stimulus of the Government's request for greater tungsten production in this country, about twice as much as is required for our total consumption annually was produced in addition to the foreign tungsten being imported into this country, and from an acquisition program which supported a price of $63 a unit the price went to $55 and then was discontinued quite abruptly because foreign tungsten is available for less than $20 a unit.

I presume you are acquainted with the aspects of tungsten development in the last few years. Is your association aware of the fact that if you did get authorization from the AEC to install 2,000 tons of additional milling capacity and you expanded your production and your reserves and then it developed that within a few years there was no justification for the Government to acquire these concentrates, then

what would be the likelihood so far as the investments of these milling concerns?

Would they be able to amortize their investments or would they be facing somewhat the same dilemma which faced the producers of tungsten in this country recently?

Have you thought of that aspect of this and the possibilities of going beyond the requirement of AEC and the Government?

I realize that probably a commercial demand will develop, but that may take a decade or two decades.

Now, what is your reaction to that?

Mr. PECK. Senator, I am very happy that you asked the question. First, I think it is very unfortunate that at these hearings our uranium industry has been compared to tungsten which has had a sad experience. In the first place, there are several major differences between the two industries.

You mentioned that foreign tungsten ores could be procured cheaper. That is not true in our uranium. The cheapest procurement of ores is in the United States.

In the uranium industry, if I have assessed correctly what I have heard from our mining association, we are not proposing a tungsten-type stockpiling program. I don't think you could get as much support from our industry on unnecessary stockpiling that you get from the wheat farmers as far as stockpiling wheat goes.

To mention Senator Barrett's approach, I had not heard it until today, but we feel whatever stockpiling might be necessary at this time would only be an interim stockpiling program until the inevitable day, as pointed out time after time, when the peaceful uses of uranium will come into play.

So for these two very great reasons, the fact that we don't have cheap foreign competition and secondly that we will develop a market for uranium—some say in a decade. You cannot compare uranium to tungsten. I believe 10 years might be a conservative figure, and if our industry is willing to risk its capital on that basis, I don't think that we have to worry about a tungsten stockpiling program in the uranium industry.

Senator DWORSHAK. Are investment interests willing to install 2,000 tons of additional milling capacity in Wyoming, if authority is received from AEC?

Mr. PECK. Investment interests are willing to install 43 hundred tons. That is the additional capacity now requested.

One of the things that the AEC requires is financial backing before a contract is signed. I would certainly say investment interests are ready to step forward and would be ready to sign contracts tomorrow.

Senator DWORSHAK. What if there are no signed contracts forthcoming?

Mr. PECK. Then the industry will continue to deteriorate further in certain phases because the hardship condition will be more aggravated.

Senator DWORSHAK. Your reply is what I expected. Without specific Government contracts these investment interests would not be willing to install this additional capacity; is that right?

Mr. PECK. At this time.

Senator DWORSHAK. Because they would not have ample time to recoup their investments prior to the discontinuance or any diminishing

of the acquisition program by the Federal Government which might compel them to rely upon commercial sources to sell their product.

Mr. PECK. I see the nature of your question. I think, however, that it is not possible now to sell to commercial sources.

Mr. Johnson for the first time alluded to the possibility that there might be some yellow cake released or licensed by the Government for sale to sources other than the Government. He made that mention at the recent National Western Mining conference in Denver.

I think our industry does look forward to the time when it can compete on a private-enterprise basis.

However, that is not now the case and I do not see any possibility of that in the near future.

Senator DWORSHAK. From what source in this country do you expect that increased commercial demand?

Mr. Peck. For example, it has been recently estimated there are 3 to 4 billion dollars of foreign market available now but through various restrictions in the Atomic Energy Commission our domestic industry which has supported the uranium industry of the world, finds it is now not possible for us to compete with our foreign neighbors for these markets. These markets are available right now because of the fact that power is of higher cost in other countries.

Chairman DURHAM. Under present policy nobody can buy it except the Government.

Mr. PECK. That is right.

Chairman DURHAM. That is why it has to come to the Government?

Mr. PECK. That is right.

We in Wyoming are caught in the peculiar position of not being able to compete where the markets are available and not being able to get a Government contract.

Senator DWORSHAK. You mentioned, Mr. Peck, the fact that these milling investors would insist upon having contracts with the Federal Government. To what extent would you give consideration to developing a demand outside the Government for this finished concentrate? You would not expect the Government to guarantee to purchase the output of this expanded mill capacity and then resell it to commercial users or to foreign customers.

Do you feel that the Government should participate to that extent or be responsible for the amount of concentrates which AEC can anticipate it will require in the next 5 years, say?

Mr. PECK. I think that as pointed out by Senator Barrett, the Government is following a very shortsighted concept as far as purchase for only its immediate military requirements are concerned. After all, we are, and have been since the beginning, except for a few bombs in the South Pacific, in a stockpiling of weapons situation, and even under present requirements, and Mr. Johnson has stated this many times, we don't see enough uranium reserves for our military requirement past the next 10 years. And that is without any consideration being given to future power requirements and other peaceful uses that may be developed.

Senator DWORSHAK. Where do you anticipate there will be a sizable foreign demand for uranium in the next decade? You would not want to sell it to countries behind the Iron Curtain.

Among the free nations of Europe where do you anticipate a demand for uranium?

Mr. PECK. You have probably heard of the agency called Euratom and others. It is a tragedy, but I anticipate that the needs of Britain, France, Italy, Japan, and others, will undoubtedly be filled from Canadian reserves instead of American reserves. It is a sizable demand now, not much in respect to the amount of tonnage we can produce, but the demand is to some extent here now.

Senator DWORSHAK. You do think, then, that there should be some concession made to enable our own domestic producers to sell some of their concentrates to European consumers rather than forcing them to rely entirely upon Canadian uranium?

Mr. PECK. I think so. There are people following me who are high in the industry in Wyoming and also nationally, who could probably better answer that question, although I feel quite safe in my replies.

Senator DWORSHAK. Thank you.

Chairman DURHAM. Are there any further questions?

Thank you very much, Mr. Peck.

Mr. PECK. Thank you.

Chairman DURHAM. It is 12 o'clock now. We lack three witnesses of getting through this morning. We have taken more time than we had anticipated. We will adjurn and come back at 2 o'clock in room 1334 of the New House Office Building.

(Thereupon, at 12 noon, the committee was recessed, to reconvene at 2 p. m., same day.)

AFTERNOON SESSION

Chairman DURHAM. The committee will come to order. This is a continuation of the hearings of this morning. The first witness this afternoon is Mr. A. V. Quine, general manager, Lucky Mc Mining Co., Wyoming.

Mr. Quine? You may proceed with your statement.

STATEMENT OF J. A. MECIA, VICE PRESIDENT, LUCKY Mc URANIUM CORP., VICE PRESIDENT OF UTAH CONSTRUCTION CO.

Mr. MECIA. Mr. Chairman, I would like to say first that I am not Mr. Quine. I am substituting for Mr. Quine.

My name is J. A. Mecia. I am vice president of Lucky Mc Uranium Corp. and vice president of Utah Construction Co. of San Francisco, Calif. I am most grateful to the committee for the opportunity of discussing with you some of our problems.

I am representing three companies at this hearing: Lucky Mc Uranium Corp. which owns and operates a uranium mine and mill near Riverton, Wyo.; Utah Construction Co. which owns a majority interest in Lucky Mc, and which, independently of Lucky Mc, has invested large sums of money in exploring and developing other uranium deposits in Wyoming; and Green Mountain Uranium Corp. which also has a very substantial investment in uranium properties in Wyoming.

The Lucky Mc mill will commence operations in approximately 2 weeks. It is a 750-ton-per-day mill which will treat both custom ore and Lucky Mc ore. The Lucky Mc mine, which, incidentally, was

the original discoverer of uranium in Wyoming, is developed and in operation.

On May 15, 1957, after preliminary discussions with the Atomic Energy Commission's Grand Junction office, Lucky Mc submitted a proposal to expand the capacity of its mill, then under construction, from 750 tons per day to 1,375 tons per day.

Later Phelps-Dodge Corp., which holds a majority interest in Green Mountain, and which has invested heavily in uranium properties in Wyoming, lacking an adequate outlet for their ores, approached Lucky Mc with the purpose of participating on an equity basis in the proposed expansion. Subsequently the Lucky Mc proposal for mill expansion was modified and in its present form is a joint Lucky Mc-Phelps-Dodge proposal to expand the present mill from 750 tons to 1,750 tons per day—an expansion of 1,000 daily tons.

The story of the establishment and rapid growth of the uranium mining and milling industry in this country is, of course, well known to all of us in this room. It is a story of cooperation between private enterprise and the Federal Government wherein private industry has borne most of the cost of exploration, development, mill construction, and operation, and where the Atomic Energy Commission has invested large sums of money on exploration, research and development, and also provided a market for ores in the form of firm purchase contracts for uranium ores and concentrates.

It is to the Commission's great credit that its policies permitted private enterprise to build and operate these mining and milling facilities at a reasonable profit, and at the same time to recover the capital costs incurred. The present status of the uranium mining and milling industry could not have been achieved so rapidly without the profit incentive.

Those of us in the Lucky Mc organization and our associates have, of course, been aware that at some point a balance would be reached between ore reserves, milling capacity and military and peacetime needs. It has been difficult for us to estimate when that time might arrive since much of the pertinent data is necessarily classified. No doubt it was the conclusion of the Commission that this balance has been or is about to be achieved that resulted in Mr. Johnson's speech of last October 28, and the announcement of the Commission's decision to limit the domestic production of uranium oxide approximately to the level which will be reached as a result of present commitments.

We recognize that in the national interest there is a limit to the commitments the Commission can make in the form of purchase contracts. We are sympathetic with the Commission's aim of holding these commitments within reasonable limits, nevertheless, this decision has raised a number of problems, including two we should like to mention:

First, and of the most importance nationally, is the effect this decision will have on exploration for uranium ores. The United States is now the leading uranium producing country in the free world. We are likely to remain the leading producer, or at least a close second to Canada, over the next 10 years. Our reserves are now estimated at approximately 70 million tons, and these reserves will be largely depleted in 10 years, barring the discovery of additional tonnage through exploration or in mining.

In order to maintain a strong reserve position, a rigorous exploration program must be maintained, and such a program requires that there be a market outlet now for a reasonable portion of the ore which might be discovered. Lacking this market outlet, any exploration activity must be viewed in the light of one's estimate of price and market for uranium several years in the future.

While it is true that the three mill contracts in existence in Wyoming each provide for the treatment of some custom ore, it is our opinion that additional milling capacity is required to support a worthwhile exploration program; that without such additional capacity, exploration will be curtailed drastically and quickly.

The second problem we should like to mention bears on the large expenditures which have been made by mining companies on exploration and development in Wyoming. These expenditures were made with the reasonable expectation that a market would be available for the ores developed. If some additional milling capacity is not granted in Wyoming, these companies have no assurance they will be able to recover their investment.

Bearing in mind, on the one hand, the Commission's desire to limit purchase commitments to a reasonable level, and on the other hand, the importance of providing an incentive for exploration, and an opportunity for recovery of capital which has been invested in development of mining properties, we should like to propose the following:

(1) That some additional milling capacity be granted to Wyoming immediately—the amount of this capacity to be determined, of course, by the Commission.

(2) That there be three prime considerations in awarding purchase contracts for the additional uranium oxide to be produced: First, the lowest price offered for the additional uranium oxide, irrespective of contracts now in existence; second, the provision in the purchase contract for treating adequate amounts of ores not presently contracted for; and third the speed with which the additional milling capacity can be put into operation.

It is our opinion that if some reasonable amount of additional milling capacity is awarded in Wyoming, thus providing an adequate marketing outlet, and if the award of this additional capacity is based upon the criteria just mentioned—with special consideration given to the price for the additional production—the incentive to explore will be restored, and investments made for exploration and development will be recovered, at a reasonable expense to the Federal Government.

Mr. Chairman, that concludes my statement.

Chairman DURHAM. Thank you very much, Mr. Mecia.

Are there any questions?

Representative DEMPSEY. I have no questions.

Chairman DURHAM. Mr. Jenkins?

Representative JENKINS. I do have a question; yes.

I wonder if you are familiar, in production of this quantity, how it is found in nature?

Mr. MECIA. I did not hear you, sir.

Representative JENKINS. I had the privilege of having been to South Africa, and going through the uranium mines down there. I had the privilege in my younger days of working in coal mines for many a day. I wondered what kind of veins you have in Wyoming.

Mr. MECIA. Our deposits in Wyoming are shallow deposits, amena-

ble to open pit mining. There are beds ranging in thickness from 2 to 40 feet and in lateral extent of 200 to 400 feet long and 2 to 300 feet wide, mostly opposite mining deposits.

Representative JENKINS. That ought to be about the cheapest kind of mining, then.

Mr. MECIA. Yes, sir; it is probably the cheapest kind of mining, depending on the stripping ratios.

Representative JENKINS. You do not have any topping to deal with?

Mr. MECIA. No; you merely remove the surface cover and start operating when the ore is exposed.

Representative JENKINS. How thick is your vein? Does it come in veins or in spots?

Mr. MECIA. They are not veins, exactly. They are more, I guess you would call them, beds.

Representative JENKINS. What is the size of these beds? I can see the economy and price with which they are handled and produced would depend on the size of the bed, the quality and so on and so forth.

Mr. MECIA. Yes, sir. The beds vary widely in size in our area. I would say they would average 4 to 5 feet thick, and perhaps 200 to 300 feet long, and perhaps 100 feet wide. That would be a rough average. Some are much larger and some are smaller.

Representative JENKINS. Do these beds come in level lands or under mountains?

Mr. MECIA. Generally they are under flat, level land.

Representative JENKINS. Is the quality as good as it would be if it was hard, or do you know about that?

Mr. MECIA. Yes, sir. The uranimum deposits in Canada, of course, are in hard rock. Our deposits in Wyoming are in soft rock and they are twice as rich as those in Canada.

Representative JENKINS. You say they are twice as rich?

Mr. MECIA. Yes, sir.

Representative JENKINS. In South Africa, it is hard rock. They produce it, though, where I have seen them, and they produce great quantities. They take out many times more than they use. Because they take it out and grind it up and you see a great big mountain where they leave the waste limestone. They get that out of thick limestone that I expect is 25 or 30 feet thick. It may be 1,000 feet underground. But yours is all more or less surface?

Mr. MECIA. Yes, sir.

Representative JENKINS. What is the test of it? Have you tested it out to see if there is an abundance of it?

Mr. MECIA. Well, sir, no, it has not been completely developed. As I was pointing out, the exploration activity has practically stopped in the area because there is no indicated market in the future. So we do not know the extent.

But I suspect that it might approach the New Mexico ore reserves at some time if properly developed. I suspect that it might do that.

Representative JENKINS. What would that mean? How big is that?

Mr. MECIA. I believe the New Mexico reserves are given of somewhere on the order of 50 million tons, or something like that, at the present time, though I do not suppose theirs are developed.

Representative JENKINS. How much of the surface of the land would that come under?

Mr. MECIA. In Wyoming?

Representative JENKINS. Yes.

Mr. MECIA. It would come under perhaps an area with a radius of, say, 30 miles or 40 miles.

Representative JENKINS. And that land is easily acquired?

Mr. MECIA. Easily acquired?

Representative JENKINS. Yes.

Mr. MECIA. No, sir. It costs a lot of money to acquire it.

Representative JENKINS. So the uranium has made value?

Mr. MECIA. Uranium has made value if there is a market for it; yes, sir.

Representative JENKINS. That is all.

Chairman DURHAM. Thank you very much.

The next witness this afternoon is Mr. Page T. Jenkins, vice president of Globe Mining Co. of Wyoming.

STATEMENT OF PAGE T. JENKINS, VICE PRESIDENT, GLOBE MINING CO., CASPER, WYO.

Mr. JENKINS. Mr. Chairman, and members of the committee, my name is Page T. Jenkins. I am speaking here today on behalf of Globe Mining Co., a corporation, and Jenkins & Hand, a copartnership composed of myself and H. D. Hand, all of Casper, Wyo.

Jenkins & Hand are consulting geologists and both of us graduated from the University of Wyoming in 1938 with master of arts degrees.

Globe Mining Co. was organized 3 years ago to develop the uranium properties discovered and located by Jenkins & Hand a year and a half earlier. Prior to Jenkins & Hand's interests in uranium, we were petroleum geological consultants and enjoyed a wide clientele among major and independent oil companies of the West.

Jenkins & Hand became interested in uranium as a result of an announcement in the local Wyoming papers in the spring of 1952 that: First, the United States Geological Survey had discovered uranium in the Pumpkin Buttes area of the Powder River Basin, Wyo., and second, that the Atomic Energy Commission had withdrawn approximately 45,000 acres of public domain from mineral entry in this area for the purpose of uranium exploration. We were prompted by curiosity, a trait common to most geologists, to investigate these discoveries.

We quickly recognized that the uranium discoveries which preceded the Atomic Energy Commission withdrawal were attended by geological conditions which extended the area for favorable prospecting well beyond the boundaries of the withdrawn area.

Up to that time no publicity had been given in Wyoming to the AEC's domestic uranium procurement program. Our logical first step then was to visit the Colorado Plateau and the Commission headquarters at Grand Junction where we were able to see and study uranium exploration, development, and mining operations for the first time and learn of the financial inducements offered by the Government to those who would succesfully prospect for this new mineral.

Uranium was considered both strategic and critical to our national defense but, at that time, was known only in short supply.

At that time Wyoming was known as an oil and gas State and not a mining State and, as a result, the plateau geologists gave us very little encouragement that Wyoming would respond favorably to uranium exploration and I well remember the trepidation with which we advised two Chicago investors that in our opinion financial backing for this venture would be better than an average economic risk.

The fact remains that, like many other prospectors at that time, we elected to risk the security of an established business for the challenge of an unknown venture because of the promise of rich rewards if successful. I appreciate the opportunity afforded me here by this committee to tell publicly for the first time the story of this venture.

GENERAL STATEMENT

Jenkins & Hand's uranium activities, beginning with the prospecting of the Pumpkin Buttes area in 1952 and ending with the development by the Globe Mining Co. by early 1957 of a million and a half tons of proven ore reserves in the Gas Hills area of Wyoming, are well known to the Atomic Energy Commission and the uranium industry. I would like to review briefly some of the highlights of this effort.

In the months following the discovery of uranium at Pumpkin Buttes and the withdrawal of public land by the AEC, Jenkins & Hand assembled the equipment and personnel necessary to carry on an extensive exploration and land acquisition program outside of the area withdrawn by the AEC. Over a hundred radioactive anomalies were located, many with high-grade mineralization showing at the surface.

Claims and leases totaling over 150,000 acres were acquired over an area of several hundred square miles. Realizing that the tremendous cost of evaluating these widespread discoveries was beyond our financial ability, we conveyed a one-half interest in our holdings to Kerr-McGee Industries, Inc., who, at that time, were just starting out in the uranium business.

Kerr-McGee spent over a quarter of a million dollars exploring these jointly owned properties during a period of about 4 years. Kerr-McGee and Jenkins & Hand equally shared the cost of developing and mining several small ore bodies containing a total of about 10,000 tons of ore. In 1956 Kerr-McGee, discouraged with the possibility of developing commercial production in the area, reassigned to Jenkins & Hand all but a small royalty interest in the properties and Jenkins & Hand have since carried on continuous exploration, development and mining operations at its own expense.

Our production has averaged, until market problems beset us recently, about 1,000 tons of ore per month. Due to excess haulage costs, high exploration costs, and the high costs of the selective mining methods required by the small size of the ore bodies, this operation has always been just a break-even proposition. With the market now severely restricted, operations may have to be suspended when the few thousand tons of presently blocked out ore have been mined.

During the several years that Kerr-McGee was actively exploring the Powder River Basin in Wyoming, Jenkins & Hand continued large-scale uranium exploration elsewhere in Wyoming and in adjoining States. Prospecting with highly sensitive radiation detection equipment mounted in a low-flying plane, airborne exploration was

carried out almost continuously for a 3-year period followed by many thousands of feet of exploratory drilling. During this period, Jenkins & Hand pioneered the exploration and development of the uraniferous lignites in North and South Dakota.

Here, as in the Powder River Basin of Wyoming, Jenkins & Hand made most of the original widespread discoveries of commercial grade ore and acquired large landholdings. Following the method previously used to finance large-scale exploration in the Powder River Basin, Jenkins & Hand approached the Ohio Oil Co. and successfully interested them in the commercial possibilities of this new mineral fuel.

The Ohio people engaged the consulting services of Jenkins & Hand to train its own personnel in uranium exploration, acquired a one-half interest in Jenkins & Hand properties and with Jenkins & Hand and later with Arthur E. Pew of the Sun Oil Co. spent several hundred thousand dollars in exploration and development of this promising future source of uranium.

Jenkins & Hand has retained a 22½ percent carried working interest in a major portion of the Ohio-Pew holdings. To date there has been no commercial market for the lignite ore reserves which were largely developed by this group.

I have mentioned our moderately succesful efforts to find commercial deposits of uranium in the Pumpkin Buttes-Powder River Basin area of Wyoming and in the uraniferous lignite areas of North and South Dakota and our more successful efforts in developing large ore reserves in the Gas Hills area of Wyoming, but no prospector can forget the many hopeful discoveries which have lead him down the primrose path to disappointment.

These are the unpublicized ventures that the prospector tries quickly to forget but which strain his resources to the limit. One of our hottest discoveries for example was in the Miller Hill area of southern Wyoming.

Here we found widespread surface radioactivity that required many months of geological fieldwork, expensive airborne prospecting and core drilling to disprove. In another case, 1 drilling program alone costing over $100,000 extending over a period of nearly 9 months exploring radioactive anomalies scattered over 50,000 acres of land failed to produce a single ton of minable ore.

Our files contain dozens of prospects all named and catalogued which have been evaluated and found wanting. At one time our landholdings totaled over a half million acres of potential uranium bearing ground. Our holdings now consist of less than 2 percent of this total and our actual ore reserves are confined to less than 100 acres.

The story of pioneering a new field of mineral exploration would not be complete without mentioning the land problems created by the inadequacies of the mining laws in Wyoming which had no mining history relating to radioactive substances and very little mining history of any kind.

Jenkins & Hand wrote the first uranium lease covering State of Wyoming land, the first uranium lease on patented land in the State, the first lease with a landowner whose mineral rights had been reserved to the Government, and entered into the first uranium leases with the Atomic Energy Commission in Wyoming.

Jenkins & Hand staked hundreds of uranium placer claims and later covered them with even more hundreds of lode claims on the advice of attorneys who were confused by the absence of clear-cut legal direction.

Valuable claims in the Gas Hills area were "jumped" by outsiders prospecting for "technical deficiencies" who succeeded, against all precedence in the mining industry, in obtaining a favorable district court ruling which resulted in an expensive Supreme Court appeal. Some of these claims, which were actually the forerunners of the many important Gas Hills discoveries to follow, are still tied up in litigation 4½ years after they were staked by Jenkins & Hand.

Jenkins & Hand were instrumental in promoting the practice of so-called split-check or share-mining in Wyoming. All of Jenkins & Hand and Globe Mining Co. mining operations are now carried on by contractors taking their profits only from mined ore.

During the past 3 years we have had share-mining contracts with over a dozen independent mining contractors ranging from a 1-man wheelbarrow operation to a 25,000-ton share-mining contract with a new company formed especially for this purpose.

We are presently negotiating a share-mining contract involving a 200,000-yard stripping operation with a group who is facing with us an uncertain and severely restricted market.

Up to now Jenkins & Hand and Globe Mining Co. have carried out their uranium exploration activities without recourse to public funds generally available to the mining industry under the Defense Minerals Exploration Administration program.

This month, however, for the first time we are commencing a drilling program in the Powder River Basin, Wyo., under a DMEA contract, since we are unwilling to advise private capital to stand the entire risk of both an exploration gamble and an uncertain market.

I would like to devote the remainder of my discussion to the activities of the Globe Mining Co., successor in interest to the properties in the Gas Hills area, Fremont County, Wyo., which were originally discovered and located by Jenkins & Hand. These discoveries which were made independently but concurrently with the more highly publicized Lucky Mc discoveries led to the development of uranium ore deposits in the Gas Hills second in size in this country only to those of the Abrosia Lake area of New Mexico.

Jenkins & Hand and their two Chicago investors organized Globe Mining Co. in February 1955 for the purpose of developing and mining these valuable properties. A month later the first ore buying station in Wyoming was opened in Riverton and Globe commenced shipments which continued without interruption at a rate never below the maximum shipping quota allowed Globe until the buying station was closed December 1956.

Globe has a record we believe unmatched by any other company in Wyoming of never shipping a no-pay load to the buying station. All of the profits from the mining of the small surface ore bodies first exploited by Globe were immediately reinvested in exploration drilling until approximately a half million feet of drilling had proved more than 500,000 tons of ore.

This point was reached soon after the announcement was made by the AEC that the guaranteed market for uranium ore would end in

1962 and that the only guaranteed market beyond that date was a uranium mill concentrate market until 1966.

Since the Commission's Riverton buying station provided Globe with a market of only about 50 tons a day between the date of its opening in early 1955 and the date of its closing in December 1956 and, since the Commission could give us no assurance of an increased market—in fact the market today for Globe ore is even less than in 1956—it was obvious to us at that time that Globe would have to arrange for a mill of its own or market its ore under extremely unfavorable conditions.

Globe had blocked out more than 500,000 tons of ore by drilling less than 10 percent of its potentially favorable properties late in 1956 when unfortunately the ore reserves were already in excess of the current mill capacity. At the then restricted market of less than 50 tons a day, nearly 30 years of extremely inefficient mining would be required to market Globe's proven ore, and 300 years to market its potential ore.

This also meant that 80 percent of Globe's proven ore and 100 percent of its potential ore could not be sold until after 1962 and then only to an overloaded market at depressed prices.

For advice on this problem Globe retained the services of Mr. John L. Chapman, consulting metallurgist, formerly head of the Processing Division of the Atomic Energy Commission in Grand Junction.

As a result of Mr. Chapman's appraisal of the mill potential of Globe properties, we approached the Commission in Grand Junction to discuss a milling contract in December 1956.

At that time we were advised that the Commission would welcome our proposal for a mill in the Gas Hills area. We talked with the Commission about a dual acid-alkaline plant or a straight alkaline plant and we talked about the possibility of a plant in Riverton on a railroad as opposed to the Gas Hills area.

We also discussed the advisability of building a plant large enough to take care of our ore, as well as a substantial amount of custom ore. Following this meeting we began work on a proposal based on what we were told the Commission would prefer as to location, custom ore, and so forth.

We met with the Commission in Grand Junction on January 9, 1957. At this meeting there was a considerable change in the viewpoint of the Commission and we were told that our proposal must now show proven reserves sufficient for a full 5-year operation, with the strong likelihood that additional reserves would be present for another 5-year period.

Therefore, in furtherance of the viewpoint expressed by the Commission at the January meeting, we undertook an intensive drilling program designed to satisfy the Commission's new requirements for a full 5-year ore reserve.

This program alone cost us $150,000 and resulted in tripling our proven reserves. We also began metallurgical test work at the Colorado School of Mines Research Foundation to determine a satisfactory flowsheet, and we engaged the E. J. Longyear Co. to evaluate our reserves for the purpose of mill financing.

All of this was carried out in the belief that once we had met the conditions that the Commission had imposed we would be granted a contract.

In July of 1957, in an endeavor to further comply with the Commission's expressed requirements for additional reserves, we entered into an agreement with Union Carbine Corp., which we felt had the effect of strengthening our position, both as to ore reserves and financial ability.

Negotiations concerning the mill contract with the Grand Junction operations office were completed in September 1957. Since that time our contract has been held up for reasons of policy changes which are not entirely clear to us.

The first public announcement of the Commission's change in policy from one of encouraging mill proposals to one of discouraging them was made by Mr. Jesse C. Johnson, Director, Division of Raw Materials, United States Atomic Energy Commission in a speech delivered before the Fourth Annual Conference of the Atomic Industrial Forum in New York City on October 28, 1957.

After explaining that adequate supplies of uranium were now available, Mr. Johnson stated: "Under the circumstances, the Commission at this time is faced with limiting commitments for additional domestic uranium production."

However, in the following sentence he said: "Proposals for domestic contracts which already have been submitted and are under review still will be considered in the light of the discussions which have taken place."

This clearly meant, and was further privately confirmed several times by Mr. Johnson, that the Globe-Union Carbide contract was still under consideration.

Chairman DURHAM. Do you consider it so today?

Mr. JENKINS. Yes.

Chairman DURHAM. It is still under consideration.

Mr. JENKINS. Yes. In November it was announced that a mill contract had been granted Fremont Minerals Co. for a new Wyoming mill to be located at Riverton, Wyo. Because the granting of this mill represented a complete departure from the Commission's policy of requiring that substantial ore reserves either be owned by or committed to the mill applicant, Mr. E. N. Hope, vice president of Globe Mining Co. on December 21, 1957, wrote to Mr. Johnson expressing concern over and requesting information on the disposition of the Globe-Union Carbide contract.

Mr. Johnson's reply was given verbally on January 14, 1958, to the six principal officers and stockholders of Globe Mining Co. who had assembled in Washington to learn the reason for the delay in the execution of this contract.

Mr. Johnson explained that our contract had been "tabled" until a study could be made of the problems created by his October 28 announcement and remedial action could be considered by the Commission.

We understand that this study is now under way and that the Commission will report its recommendations to the Subcommittee on Raw Materials of the Joint Committee on Atomic Energy on or before March 15, 1958. In the meantime, our market for ore has steadily deteriorated to the point where we can no longer mine on an efficient basis. Unless a very substantial market is provided for us, we will be

forced to mine only the very high grade material and waste large quantities of low and medium grade ore.

Throughout our history as an organization, we have been encouraged by the AEC to discover and develop more and more reserves. We have negotiated a mill contract with the AEC in good faith. We have at considerable expense complied with all requests and conditions imposed upon us by the AEC in connection with our milling contract, and we are now deeply concerned over the possibility that we may be asked to wait until the market problems of the whole industry are studied by the Commission and possibly by the Congress before action is taken on our already fully negotiated contract with the AEC.

CONCLUDING STATEMENT

In the recent public announcement by Mr. Jesse Johnson on October 28, referred to above, in which he reported drastic changes in the Commission's attitude with respect to new mill proposals, he also expressed the hope that private industry would continue to engage in uranium exploration and development. Let me quote the concluding paragraph of that announcement:

> Therefore, if we are to achieve the atomic-power development anticipated in the next 10 to 20 years, uranium exploration and development should continue on a broad scale. The uranium producers cannot be expected to finance the development of ore reserves for future production without a present market and confidence in the future.
>
> The Commission's domestic concentrate program assures this country a major uranium-producing industry through 1966. The problem now is to provide an incentive for maintaining our ore reserves at approximately existing levels through replacement, by exploration and development, of the ore being mined.
>
> Much of this incentive will have to come from confidence in the future market for atomic power. I hope that the information presented at these conferences will contribute to that confidence.

In testifying at the section 202 hearings before the committee on February 3, 1955, Mr. Johnson, speaking from long personal experience in the mining business, urged the adoption of long-range market guaranties for the uranium-mining industry and said:

> Furthermore, I believe that the Government owes to the people now spending money in trying to find uranium deposits and developing uranium deposits, at least 5 years prior notice to any change or reduction in the present buying program.

On January 16, 1958, geologist-prospector-millionaire, Charlie Steen, whose perseverance and good fortune was the incentive to many who tried to follow in his footsteps was quoted in the trade magazine, Uranium, as saying:

> Under present conditions, I would hate to be the prospector who finds another Mi Vida. If he sold out, he wouldn't receive 1 cent on the dollar of what it is worth on Circular 5 prices. And if he kept it, he couldn't get anybody to mill the ore for him. It is ironical that private industry was successful in finding so much uranium as to make it virtually worthless at this stage. Anybody who goes out and prospects for uranium now is a damned fool.

Although we disagree with Charlie that there is no place left in the uranium business for the prospector or the professional exploration geologist, we submit that the first step to be taken by the AEC to further their worthy objective of continued exploration and development is to make good on its past promises and commitments to all those who relied thereon. In all good faith it cannot do less.

I thank you.

Chairman DURHAM. Looking at your statement, Mr. Jenkins, I believe you feel that they have not kept faith with you. Is that what you wanted to say and did not say?

Mr. JENKINS. We have spent, Mr. Chairman, over a million dollars, ourselves, and various parties who joined with us in various uranium-exploration ventures, in uranium exploration and development.

We spent 6 years away from a business which was a good business when we left it. It appears to us now that we are faced with an impasse.

Chairman DURHAM. Are there any questions?

Representative JENKINS. I would like to ask a question. Are you familiar with the deposits in Africa?

Mr. JENKINS. I am familiar with them only indirectly by occasional reading about them. I have never been there.

Representative JENKINS. Of course, being a mining man, you, no doubt, know about how they would compare with your properties.

Mr. JENKINS. Yes; I know that.

Representative JENKINS. Down there it seems to me they have an endless supply, although I am not an expert about that. If it is all through that country as it was in the sections I visited, they have a grand supply there, and it is all hard and all usable, apparently. From the description given by the witness a while ago, it seems that what you have is soft stuff.

Mr. JENKINS. That is correct.

Representative JENKINS. I am not enough of a mining man to know how that works out. Of course, you take the water out of it, and press it in different ways, and you have a commodity.

Mr. JENKINS. The grade of our ore, Mr. Jenkins, is about four times as good as the South African ore. Our mining problems and costs are far less. We can compete in the Gas Hills area with any part of the world on an open market for the production of uranium ore and concentrate. We have a lower cost operation, based on world-wide considerations, even considering Canada, which has tremendous tonnages of uranium-ore reserves. We still can mine and produce uranium ore and concentrate cheaper than can be done in any other part of the world.

Representative JENKINS. I am mighty glad to hear that. It might be interesting for you to know how much material they take out in South Africa when they go down underground and get that vein. I do not know how thick it is, but I suppose with the lime and all it is 10 or 15 feet thick and just as hard as the hardest rock you ever saw.

Mr. JENKINS. I understand it is.

Representative JENKINS. Then they bring it out, in the mine I was in, from 1,200 or 1,500 feet. They bring it up to the surface. They had a wonderful system of testing it out then. They grind it and run it through the first tank. Maybe the tank would be half as big as this room, and it has 10 or 15 feet of water in it. It goes through there first. From that place, the way I understand it, if there was any specifically valuable asset in it, such as gold or silver, they take it out in the first wash—then they run it into the next wash and take something else out. Then at the last, after they have taken out what

they wanted, which I suppose, is about 10 percent of the volume, they run it up on a mountain. They had 6 or 10 big white mountains there that were made out of that stuff that they got out of the ground.

In other words, it would seem to me that we have in our country a much more favorable prospect compared to all of the work that they do down there in South Africa. Of course, they take the gold and silver out of it. No doubt they make some money or they would not do it.

But the efforts they put forth, it seems to me, are much more expensive than it seems yours are. I am glad to hear you say we have such good prospects in our country. So far, how far have we developed them in this country?

Mr. JENKINS. Well, that is pure crystal-ball gazing to know that.

Representative JENKINS. I am just asking for your judgment.

Mr. JENKINS. In the case of our own properties, we feel that we have explored them to the extent of only about 15 percent, and that by far the largest reserves are still remaining untested and undeveloped, unproven.

Representative JENKINS. You do not go down underground very far?

Mr. JENKINS. No. It is relatively shallow.

Representative JENKINS. That is all, Mr. Chairman.

Chairman DURHAM. Are there any further questions?

If not, thank you very much.

The next witness is Mr. C. Allen Elggren, secretary and counsel, Federal Uranium Corp.

STATEMENT OF C. ALLEN ELGGREN, SECRETARY AND COUNSEL, FEDERAL URANIUM CORP.

Mr. ELGGREN. Mr. Chairman, and members of the committee, I am C. Allen Elggren, secretary and counsel, Federal Uranium Corp. This is a publicly owned, completely independent company. We are an applicant for a 500-ton per day processing mill with which to concentrate our extensive ore reserves and those of other independents who rely upon us for cooperatively milling and marketing their output.

I come before your committee to provide you with the background and facts by which we believe we qualify for such a processing mill. I would also have you inquire as to whether we have been led out to the end of a limb to be possibly sawed off by a decision to cut back on domestic uranium ore production while at the same time the United States is buying vast quantities of ore abroad.

From our earliest inquiries to AEC we understood that an applicant should be able to show it controlled at least half the required proven ore to operate the requested mill for first, 5 years and more recently, 7 years.

Federal, by acquisition, merger, and contract operation, has some 3,000 mining claims embracing approximately 60,000 acres. Up to the end of 1957 we have explored some 5 percent of this area and developed more than 1 million tons of blocked-out ore and approximately another million of potential ore, on these properties which are located in the Gas Hills area of Wyoming.

Each year, if AEC provides us a market for our output, we believe we can extend our reserves by a comparable amount. Thus, we feel we have clearly qualified as to adequacy of ore supply.

Let me sketch briefly the events leading up to this application.

In early 1956, when the AEC buying depot at Riverton, Wyo.—the only market for Gas Hills ores—placed limits on the quantities of ores it would receive, first inquiries on possibilities of getting a mill were directed to Grand Junction. The requirement that the applicant itself control at least half of the mill's ore requirement for a period of years long enough to amortize its cost, sent us back with the suggestion we develop more ore and get other independents to join forces with us. This was done in 1956.

By the spring of 1957, increases in our proven reserves prompted us to engage an outstanding expert on design and operation of uranium mills. He studied our holdings, location, quantity and quality of ores and by June 1957 he had sufficiently verified our justification for installing our own mill. I came to Washington and so informed Mr. Jesse Johnson, Director of AEC's Raw Materials Division.

During the summer more properties were acquired and explored and by August 1957 our data was far enough along to enable us to discuss with Grand Junction our initial suggestions as to size, location, and type of mill best suited to our requirements.

In September 1957, by phone conversations with Mr. Alan Jones, head of AEC's Grand Junction office, we kept them abreast of our assembly of data. We confirmed that the work of the engineering firm (Western Knapp) which we engaged to do the detail design calculations and plans would be acceptable and told them that we hoped to file our completed application in October.

On October 2, 1957, with scope information from Western Knapp and our own data we went to Grand Junction and met with Mr. Jones. There we discussed the additional detailed information needed to process a mill application. Western Knapp informed us that it hoped to complete its portion of the application in some 3 weeks. When Western Knapp ran behind schedule on completing their part of the application, we so informed Mr. Jones on October 29. At that time he assured us that he considered our application was "already pending."

The application was completed and filed in Grand Junction on November 14, 1957. Examination by the Grand Junction office brought us assurances that the application provided all information needed. Despite frequent inquiries since then at Grand Junction, and at Washington, we have received no information that any decision has been reached on our application and this uncertainty is becoming an increasing hardship.

You may be interested to know that we have spent $800,000 in the past 2 years with heavy obligations for the future, and proved ore containing from 5 to 10 million pounds of U_3O_8.

More than 30 to 50 individual property owners have contracted with us on AEC's assurances that we would receive a mill. Only with this mill can we add the maximum to our proven domestic ore reserves.

Besides that it leaves "out on a limb" our 17,000 stockholders who believed as we did that the United States would buy our uranium at least through 1966.

This is important to our country and its people at large. As recently as last week in hearings before this committee, the AEC said:

* * * In considering the rapid expansion of ore reserves during the past 3 years, the importance of one small area should be emphasized. If we eliminate an area within approximately 30 miles of the town of Grants, N. Mex., we would have only about a 3-year ore supply at the estimated 1959 production rate. There is no guaranty that areas of similar importance will be found. We certainly are not safe in projecting ore reserves on the basis of the past 3 years' experience. We also should consider another factor—rarely in the history of mining has the search for a metal been so intensive and widespread as that for uranium. That search will continue only as long as there is a favorable outlook for the uranium market.

We are ready, willing, and able to finance this mill that we seek but we must have AEC's agreement to buy our output so we can continue our explorations and help insure that the Gas Hills area become an actual, rather than a potential, second great major uranium ore source within the United States.

You and others are far better equipped than I to decide how important this is to the national security, but it certainly seems a matter worthy of your attention and interest.

We have always enjoyed courtesy and cooperation from the people at AEC at all levels—and we are most appreciative of this. However, we are still waiting for word on our application.

It is creating greater hardships every day. I hope you will feel as I do, that all this raises questions of sufficiently general interest that I was warranted in taking your time.

Thank you for your kind invitation to appear before your committee, and to further support in detail the matters which I have touched in these few minutes. I respectfully request your permission to file a more detailed statement for printing in the record.

Chairman DURHAM. Without objection, it will be included in the record.

(The document referred to follows:)

STATEMENT BY FEDERAL URANIUM CORP.

INTRODUCTION

A. Historical.—Federal Uranium Corp. and its associated and predecessor companies through merger have been associated and active in the mining business for many years. Howell Mining Co. and Kentucky-Utah Mining Co. were organized in 1910 and 1928, respectively. These two corporations became associated with Federal Uranium pursuant to a merger agreement which became effective April 28, 1955, at which time Utida Uranium Co., Inc., Interstate Uranium, Inc., Western States Uranium, Inc., Santa Fe Uranium Co. U. & I. Uranium Corp., Fourteen Group, Inc., Uranium Prospectors, Inc., and Federal Uranium Corp. were merged into 1 surviving corporation known as Federal Uranium Corp., bringing together some 17,000 stockholders.

All these companies participated in early exploration and development of uranium properties in the intermountain area. Federal Uranium and its predecessors have expended in the last 4 years for purposes of acquisition, exploration, and development of properties approximately $4,045,107.33. Federal was successful in developing substantial deposits of ore located in the Big Indian Mining District, San Juan County, State of Utah, one of which is known as the Radon mine. Also, through one of its predecessors, Federal participated in the development of the Daniel-Ruddick property, also known as the Almar mine, and presently operated by the Hidden Splendor Mining Co. Federal disposed of its one-third interest in this property in June of 1956.

Through the merger in April 1955 there were brought together some 43,000 acres of what was thought to be potentially important uranium-bearing property. Federal has expended substantial funds in exploring this vast acreage to deter-

mine its potentials and has developed certain usable properties and dropped prospects not meriting further exploration. Federal has examined and explored many other properties which have been presented to it, located largely in the western part of the United States in the States of California, Nevada, Arizona, New Mexico, Colorado, and Wyoming.

B. Organization.—In building Federal Uranium by careful design, it has brought in personnel well qualified to handle and resolve milling, mining, and management problems related to its present and prospective operations. Persons now associated with the company have had long years of experience in dealing with problems in the mining business. Some of them have been associated with the uranium industry since its pioneering days in 1948–49. It is now staffed and equipped to handle all problems in mining, milling, and related fields. There follows a list of the officers and directors of Federal Uranium, with a brief résumé of their backgrounds:

Ralph W. Neyman, president and director: Mr. Neyman is a veteran mining engineer and mine operator. He was employed for 26 years by Hecla Mining Co., directing mining operations in Idaho, Montana, California, and Utah. He became general manager of Hecla in 1951 and served in that position until he resigned in the summer of 1956 to join Federal Uranium. Mr. Neyman is widely known for development of new equipment and methods, many of which are used throughout the industry.

Lester S. Harrison, vice president and director: Mr. Harrison is a veteran mining attorney and operator and has been the founder and president of several mining companies in Coeur d'Alene mining district. He has had more than 40 years' experience in western mining.

C. Allen Elggren, secretary-treasurer, general counsel, and director: Mr. Elggren has been a practicing attorney in Washington, D. C., and in Salt Lake City and has been associated with natural resources enterprises as both an operating official and counsel since return from the armed services in 1945. He has been associated in the uranium business since the middle of 1948 and has been instrumental in organizing and forming a number of uranium mining companies since that date.

William H. Gibson, director: Mr. Gibson has been associated with the mining industry for many years and is familiar with the many problems which have faced the industry over the long period he has been associated with it. He is president of Combined Metals, Inc., and secretary-treasurer of Western Powder Co.

J. B. Haffner, director: Mr. Haffner is the retired president of the Bunker Hill Co., which is the second largest lead-producing company in the United States and which produces approximately 15 percent of the Nation's output of zinc. He was general manager of Bunker Hill for 14 years and was president for several years until his retirement in 1955. He received his engineering training at the Royal Technical Institute in Stockholm, Sweden, and worked as an engineer and a miner in England, France, Germany, and Russia before coming to the United States in 1910. He was general superintendent of Granby Consolidated Mining, Smelting & Power Co. in British Columbia, and general manager of the American Metal Co. of New Mexico and also general manager of Consolidated Copper-mines Corp. at Kimberly, Idaho. He joined Bunker Hill as general Manager in 1940. He is president of Silver Mountain Lead Mines, Inc., and a former president of the Idaho Mining Association.

Melvin D. Rueckhaus, director: Mr. Rueckhaus is a practicing attorney with specialized experience in the mining industry in Albuquerque, N. Mex.

C. Federal Uranium's entry into the Gas Hills area of Wyoming.—In early 1957 Federal entered into the Gas Hills area of Natrona and Fremont Counties of Wyoming on a substantial and favorable basis. Properties in this area had previously been considered, but because of inability to acquire favorable properties on proper terms, earlier entry into this area was delayed. First properties acquired in this area were those belonging to Amrad Oil & Minerals Corp., consisting of some 200 claims, which were thought to lie in trends and channels emanating directly south-southeast from the Lucky Mc and Vitro operations. An agreement was then concluded with the Gas Hills Uranium Co., who, in the estimation of Federal, held the most potential properties in the Gas Hills. Other smaller property acquisitions have since been made, such as those of Ran Rex Uranium Co. Gas Hills Uranium has acquired substantial additional properties which are available to Federal pursuant to an agreement between the parties, upon payment of half the acquisition costs. Federal now have available for exploration and development in the Gas Hills area more than 3,000 claims. The location of these properties are shown on the map supplied committee members.

D. Negotiations with Gas Hills Uranium Co.—At the time of the initiation of negotiations with Gas Hills Uranium Co., basic points to be met were understood by the negotiators. Gas Hills had informed Federal Uranium Corp. that it felt it had, based on its own exploration, properties on which very substantial tonnages of ores could be developed. Gas Hills, therefore, was not interested in any agreement which would not contemplate a milling program in connection with the exploration and development of the properties. The thinking of Gas Hills in this connection was that it or its predecessors, who were some of the earliest prospectors in the area, had acquired properties after hard and exhaustive and detailed work from a geological standpoint. Gas Hills, after acquisition of a substantial part of its property in 1955 proceeded to Grand Junction, Colo., for conferences with the Atomic Energy Commission and were advised and encouraged by that Commission, who stated that Gas Hills should accumulate or develop sufficient tonnages on its properties and a permit would be granted to it for the construction of a mill. Since Gas Hills felt it had properties on which a great part of the potentials of the area might well be developed and that there was substantial evidence to this effect at the time of negotiations with Federal, it felt that it should participate in any mill which would be based upon the tonnages developed. After examination of Gas Hills properties, and as negotiations became underway, Federal was convinced of the justice of this position and entered into a contract and agreement with Gas Hills establishing the right of Gas Hills Uranium to participate in profits from any mill which might be constructed by Federal in the area.

After completion and execution of the contract in early 1957, Federal moved rapidly toward exploration of the area and had, through mid-October 1957, by drilling of some 5 percent of its acreage developed over a million tons of ore averaging 0.26 U_3O_8 and has reason to believe, based on that drilling, that an additional million tons of potential ore are available. These potentials do not take into account additional ores which are felt will be discovered on unexplored claims which are under Federal control in the area.

The contract between Federal and Gas Hills is predicated on construction of a mill as soon as sufficient ore was developed to satisfy AEC. Federal agreed to move forward in this direction as rapidly as possible and has done so by filing its application last fall. Contractual obligations were entered into in good faith between Gas Hills and Federal, based on the assurances of the AEC that when the ore was proved in sufficient quantity to feed a mill for a period to reasonably amortize its cost, a contract for output and a construction permit would be forthcoming.

E. Holdings of Federal and Gas Hills uranium in Gas Hills area.—A thorough geologic examination of the holdings of Federal and Gas Hills Uranium Co. in this area of Wyoming, based on ore trends, channeling and geological formations and findings from exploratory drilling, encourages one to realize that these properties probably are second only to Ambrosia Lake, N. Mex., in our country's overall long-range supply picture.

F. Milling requirements of the Gas Hills area.—There are at this time on a most conservative basis, between 9 and 10 million tons of blocked out ore in the Gas Hills area including Federal's, with vast promising acreage still unexplored. To process this ore there has now been granted in the immediate Gas Hills area only approximately 1,150 tons of milling capacity per day. To haul ore 60 to 80 miles to another custom mill at Riverton, after hauling allowances expire in 1962, is virtually impossible on its economics. Federal and other companies which have developed reserves in the Gas Hills have expended extensive funds and have plans for the expenditure of additional substantial funds in order to mine and mill their known reserves and locate additional tonnage. We believe that the estimate of the blocked out ore in the Gas Hills Area is conservative, and that considerably more than double that amount will be discovered and hence available for milling the following year. Beyond that one must look to the AEC's making a market to warrant planning further expenditures.

At present Federal has undertaken a very extensive and successful program of development of properties. It realizes, however, that probably some of the greater and better tonnages will be located at lower depths, which will cost substantially more to explore. If AEC makes the market for uranium uncertain, Federal has no alternative but to cut back its exploration program and expenditures of further funds.

If milling capacity becomes available to Federal only on a custom basis, its approach to future exploration and development will of necessity be reconsidered. Under such arrangements, it would have no control over mixing of

low-grade ores and would be limited to mining of ores which would return sufficient profit to merit their extraction. Only by Federal's having its own milling capacity can it have the necessary flexibility in mining of tonnages to permit most economic extraction of the lowest commercial grade of ores by mixing on a basis which would not only permit profits for use in future exploration, but the extraction of ores which otherwise would have to be left in the ground.

For example, it is estimated that with milling capacity of its own, Federal could possibly mine ores containing only one-tenth of 1 percent of U_3O_8 where it could mix it with low cost higher grade ores for millfeed. Tonnages available for millfeed under such circumstances could well increase to two or more times. On the other hand, if Federal were to mine ores for purposes of feed for submission to a custom mill, the ore grade would probably be mined at 0.25 of 1 percent of U_3O_8 content. Grades of lower content generally would not be acceptable from an economic standpoint.

Where large acreages of lands on which many varied types of ore bodies may be found of varying degrees of richness are controlled by one company, most efficient operation requires the full exploration of all said properties and the most flexible opportunity to mix ores which are found on such properties. To be subject to the whims and restrictions of a custom milling market could result in the most uneconomical and inefficient extraction of units of U_3O_8 from the properties, since it is to the advantage of the custom mills to limit the ores which it will accept to those of the better grades. Many current examples in the present uranium mills who are accepting ores on a custom basis can be cited to substantiate this point. To operate as one would be forced to do under usual type milling contracts would cause the wasting of many units of U_3O_8 which could otherwise be extracted through low-grade ores. Such operations can only be classified as wasteful of our natural resources and subject, we believe, all concerned to severe criticism, if not at this time, at a later date when reserves of uranium may well become critical. Up to the present time, much low-grade ore has been forced to be left in the ground, since it could not be extracted economically or to the best advantage of the operator. This will be increasingly the case under any custom milling contract where an excess of higher grade ores for that mill may be from time to time available.

Federal acquired properties on such a large scale in the Gas Hills area to be sure it covered as much of known or suspected ore bodies as possible and to be able to combine and mix ores from its various properties. There has always been felt a great need, from a conservation standpoint and for purposes of obtaining the greatest profit from mining operations, for the mixing and combining of such ores. It is the history of the mining industry that the great benefits from our natural mineral resources has come mainly from low-grade deposits and the ability to treat them on a mass and efficient basis. The greatest efficiency can come where the higher grade ores are mixed with the lower grade ores and extraction of the ores from the earth is undertaken under an overall program where costs are spread between the high-grade and low-grade ores, thus averaging them out. Much of the low-grade ores will remain in the ground, lost forever, because they cannot be extracted profitably on their own. To go back in and repair tunneling and underground workings or to otherwise rework mines to extract fresh ore would prove too costly.

G. Future exploration.—Unless sufficient milling capacity on which it can rely is available to a mining company such as Federal Uranium on a basis which would permit an economic return and on which future exploration could be based, Federal would find it necessary, as heretofore stated, to curtail any future exploration. In other words, we are denied a market and are hurt by the denial. Only a very small part of the potential area of the Gas Hills has been explored. Much extensive exploration must be anticipated in the future to develop uranium reserves. Despite opinions of some that at present there is only a 10-year supply of uranium ores in this country, we feel the Gas Hills area at various depths may have many years of potential production. If there is any increase in demand due to breakthrough in the construction of cheaper reactors and the use and application of atomic energy in other directions, present supplies may prove to be grossly inadequate, if additional supplies are not developed. Such exploration and development will only be undertaken and made on an incentive basis. This incentive, of course, is the knowledge, or at least hope, that there will be a fair market for future ores which will be discovered and that profits which may be made from ores which are presently mined and milled will be sufficient to amortize investment and leave a fair return on

invested capital after paying for the search and development of uranium for the future.

Federal mill application: Federal has made formal application to the Atomic Energy Commission for construction of a 500-ton mill in the Gas Hills area. This application initially discussed in September and October was finally perfected and filed November 14, 1957. Preparation for filing the application was underway for some time before submission, and on a conservative basis, Federal felt it could justify the application by reserves which it had or hoped to develop.

The 500-ton application was sized to tonnage available and to spread earnings over a period which would pay for the mill and still leave money for a mining, milling and future exploration program in the area.

Chairman DURHAM. Are there any questions?

If not, thank you very much, Mr. Elggren.

Now we shall move over to New Mexico. Is Congressman Montoya here?

Come forward, Congressman.

STATEMENT OF HON. JOSEPH M. MONTOYA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW MEXICO

Representative MONTOYA. Mr. Chairman and members of the Joint Committee, I am very grateful to the committee for granting me the privilege of testifying concerning the vital natural resource uranium.

Needless for me to point out that my State of New Mexico has been in the forefront in the discovery and development of uranium ore, and I feel that we are very well acquainted with the impact that necessarily follows because of the change of policy on the part of the Federal Government.

It is acknowledged by those who profess knowledge of our resources and our needs of this vital mineral that the United States has at present ore reserves of 70 million tons which would carry us over a 10-year period at the current production rate.

Because of the peculiar nature of this product and the fact that the United States Government is the only purchaser, the uranium industry is presently in a sea of uncertainty wondering whether to move forward or to suspend its plans for enhancing current production.

This state of confusion arises from the statement of policy credited to the Atomic Energy Commission recently when Mr. Johnson stated:

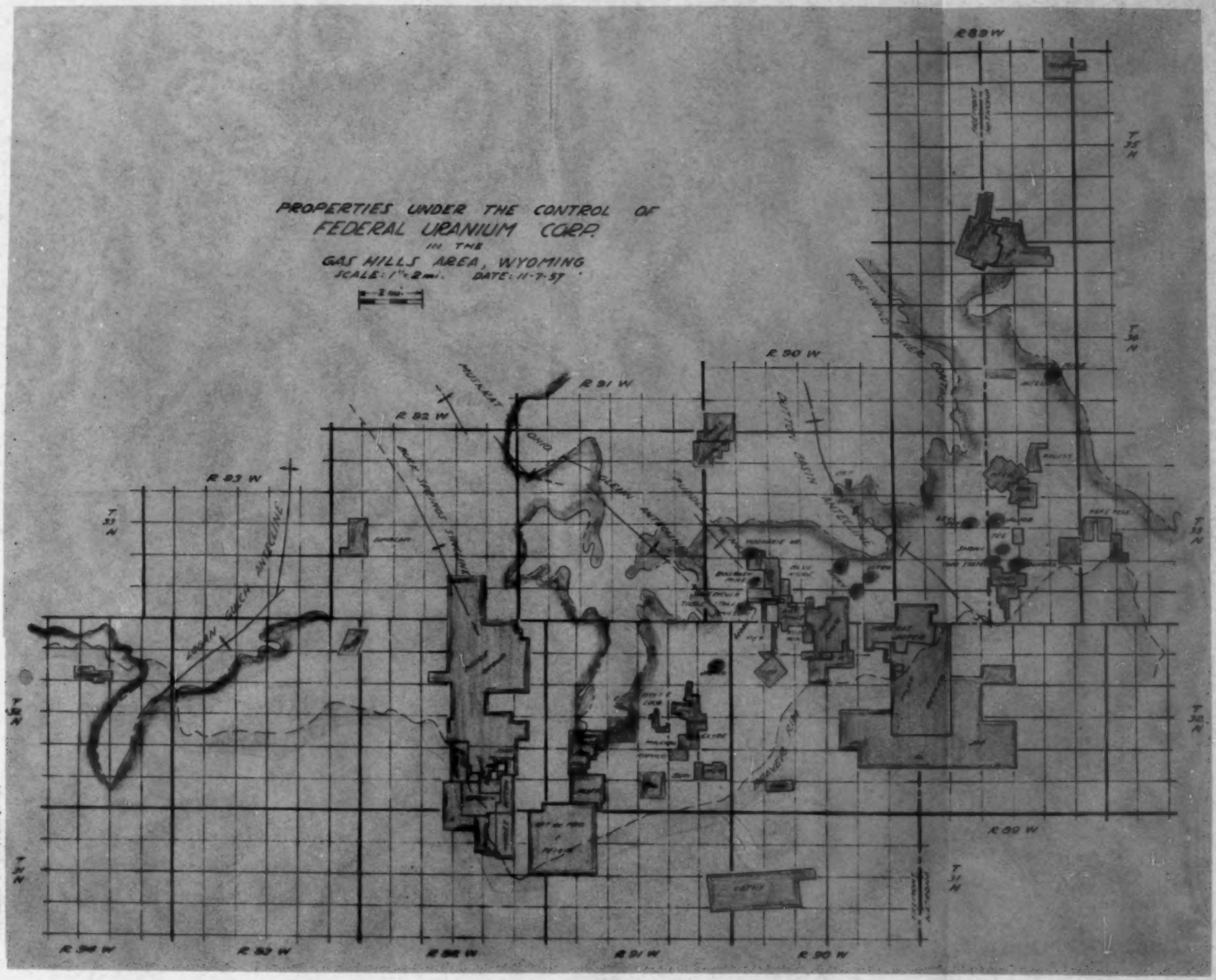
> * * * We have arrived at the point where it no longer is in the interest of the Government to expand production of uranium concentrate. * * * It would be undesirable from the standpoint of industry as well as the Government to expand the uranium production rate beyond currently projected requirements and then be faced with a major curtailment at some later date.

This statement alone has upset the stock market which is the very basis for financing the exploration and development and production that this young industry has been able to espouse successfuly.

Many little people have borrowed money to buy uranium stocks in different corporations organized in this country because they had reason to believe that the United States Government was in dire need of this vital ore in its defense program.

There has been no indication that the need has ceased to exist and the history of imports of this vital ore clearly refutes any justification for the Government's position as announced by Mr. Johnson.

I am not trying to be critical of Mr. Johnson or even his statement except to say that it has indeed been untimely and came about at a time



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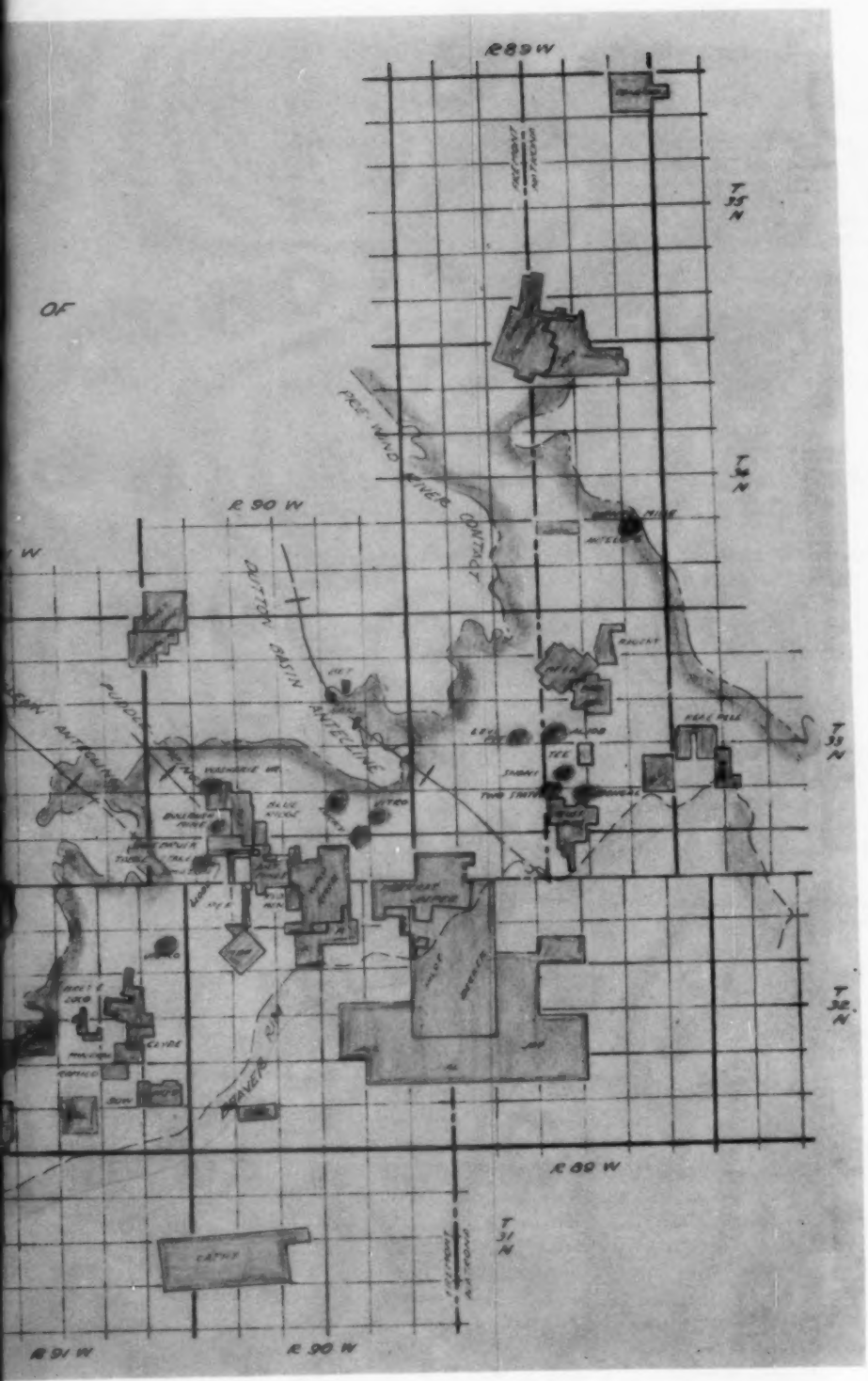
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when the uranium industry was reaching the horizon of stability and had passed its era of speculation on the stock market.

I cannot reconcile in my own mind the Government's position with the statistical data concerning imports. According to the New York Times under date of January 6, 1958, the following statement clearly throws cold water on any justification that might exist for curtailing vital production, namely:

> * * * This was the situation late in the year when the AEC began limiting its commitments for more uranium production:
>
> United States output was running at about 10,000 tons of uranium oxide a year. At least 10 new mills were under construction or contract to process additional ore. And substantial amounts of uranium were still coming from Canadian and South African producers under old, long-term contracts.
>
> By early next year, production in this country was expected to be at least 15,000 tons annually and Canadian output 14,000 or 15,000 tons. South Africa was producing about 6,000 tons a year.
>
> And output for all of the world outside the Soviet orbit was expected to reach 40,000 tons or more by the end of 1959. Britain, France and other countries will take some of this, but United States buying commitments cover more than 80 percent of this total production.

I do not pretend to be an expert on this matter but certainly I do know that in the absence of a clear-cut policy of procurement by the Government for the future, chaos will set in and the possibility for obtaining financial backing for further exploration and development will indeed be nebulous.

The small companies who are still struggling from their pains of infancy will be wiped out and many little stockholders who placed great faith on this program will have suffered great economic losses.

The giants of the industry will not be so hard hit because they are companies which have diversified interests and the loss that they would otherwise suffer can be absorbed by other aspects of their operation.

By this I do not mean to say that we should ignore the welfare of these big companies, but I do think that a forthright program on the part of the Government for the future of this very young but vital industry would clear the mist and open a greater tomorrow for our country.

I sincerely hope that this committee will analyze the impact of imports and the ruinous consequences that might follow unless procurement policies are geared to encourage further exploration and development as the Government led every individual to believe when prospecting for uranium ore was in its pioneering stages.

Again I wish to thank the members of this committee for giving me the time and extending to me the privilege of presenting this statement.

The witnesses from New Mexico, I am sure, are highly qualified to answer any questions that the committee may see fit to propound. But I would like to ask a special favor of the committee, which is germane to the discussion before the committee today. On December 9, the New Mexico Economic Development Commission and representatives of the uranium industry gather in Albuquerque for a forum discussion on the future of the industry. The transcript of those proceedings is a very important document which deals with the subject of discussion before this committee today.

I would like to ask the committee for permission to incorporate, as an extension of my remarks, the transcript of that particular meeting to which I have referred.

Chairman DURHAM. Is that the document you have in your hand?

Representative MONTOYA. Yes, it is 117 pages.

Chairman DURHAM. Why not just file it with the committee as a part of the proceedings? Then we would not have to have it printed.

Representative MONTOYA. All right. Fine.

Chairman DURHAM. Thank you very much.

Representative PATTERSON. Mr. Chairman.

Chairman DURHAM. Mr. Patterson.

Representative PATTERSON. I wish to say to the gentleman that I am from an area where we have to depend a great deal upon high tariffs.

I can see the situation you are confronted with in this particular case. You certainly have my sympathy, because I believe in rebuilding our American industry first. I can just visualize some kind of a happening that might take place in the future where we would be strapped for uranium, and be solely dependent upon foreign imports. I think at this time in the history of our country, when things are moving so rapidly, especially along the scientific lines, we should do everything to encourage our local mining organizations regardless of whether they are large or small. I can visualize where it does have a part, and plays a very important part, in the defense of our country and in our country's security.

I want to say to the Congressman that I think it is commendable on your part to be here today and to take such an active part in these hearings.

Representative MONTOYA. I also wish to thank the Congressman for contributing to my statement with such expert knowledge.

Chairman DURHAM. Congressman Montoya, in that study that was made by this group, did they attempt to analyze the cost of production in Canada and in South Africa?

Representative MONTOYA. No. I do not believe we have ever had that information, but I am sure that that can be developed from some of the New Mexico witnesses who have devoted and dedicated their time almost entirely since uranium came to be.

Chairman DURHAM. I was thinking of the wage scale and other things in these other countries. There is quite a differential, you know.

Congressman Dempsey?

Representative DEMPSEY. I have no questions.

Chairman DURHAM. Mr. Jenkins?

Mr. JENKINS. I have no questions.

Chairman DURHAM. Mr. Hosmer?

Representative HOSMER. I have no questions.

Chairman DURHAM. Thank you very much.

Representative MONTOYA. Thank you.

Chairman DURHAM. The next witness is Mr. Jack Wentworth, director of the New Mexico Economic Development Commission.

STATEMENT OF JACK WENTWORTH, DIRECTOR, NEW MEXICO ECONOMIC DEVELOPMENT COMMISSION

Mr. WENTWORTH. Mr. Chairman, and members of the committee, I would like to express our sincere appreciation for being invited to be here today.

My name is Jack Wentworth. I am director of the New Mexico Economic Development Commission, an agency of the State government of New Mexico. The commission recognizes that the uranium industry is of great importance to the economy of the State of New Mexico, and it is on behalf of these people that we appear here today.

I would like to express the regret of the chairman of our commission that he could not attend today as a witness, due to an attack of the flu.

The interest of the New Mexico Economic Development Commission in the matter now before the Joint Committee on Atomic Energy, lies in the problem faced by the legitimate uranium operators who have proved ore reserves, but no facility for milling or marketing them.

The New Mexico Economic Development Commission has been advised on excellent authority that 6 operators in the Grants-Ambrosia Lake area have a total of more than 2 million tons of proved uranium reserves blocked out, but no milling commitments.

The New Mexico Economic Development Commission became interested in this problem after the statement made by the Atomic Energy Commission October 28, 1957.

The New Mexico Economic Development Commission held a meeting in Albuquerque, N. Mex., on December 9, 1957, with the leaders and representatives of the New Mexico uranium industry.

The transcript of that meeting has just been introduced by the preceding witness, Congressman Montoya. This meeting was attended by Mr. Jesse C. Johnson, Director of the Raw Materials Division of the Atomic Energy Commission.

We believe that prior to October 28, 1957, there were more than 40 drilling rigs operating in the Grants-Ambrosia Lake area. We have been advised that there are not more than 12 drilling rigs operating in the same area, doing exploration and development at the present time.

The New Mexico State land commissioner, Mr. Murray Morgan, stated on February 19, as reported in the press, that the Government's uranium-buying policies were responsible for a sharp decline in revenue from the State's sale of mineral leases.

Commissioner Morgan stated that he is going to stop issuing mineral leases until there is some clarification of uranium milling policies which have drawn protests from people in the uranium industry.

Commissioner Morgan also pointed out that the monthly sale of mineral leases last August produced $4,400—September's sale brought in $5,200—October, $2,500—November, $968—December 1957, $227—January 1958, $377—and the sale last February 19 dropped to $118. Only 6 of the 30 tracts offered on February 19, 1958, were sold.

The Uranium Institute of America has stated:

> Recent statements concerning uranium and atomic energy have stimulated a great deal of speculation and anxiety as to the future markets for uranium.

The New Mexico Mining Association, on November 8, 1957, adopted the following resolution:

We deplore the recent announcements of the United States Atomic Energy Commission that further contracts for the purchase of domestic production of uranium concentrates will be curtailed.

As a result of such policy many operators in newly developed areas will be unable to find a market for their ores. Therefore, it is strongly urged that the Commission provide adequate remedial measures for such cases.

We further urge that the Commission purchase domestic ores and concentrates when they are available rather than to purchase the same from foreign sources.

In view of information which reached the New Mexico Economic Development Commission in the form of the two statements just quoted, facts provided by members of the New Mexico uranium industry, and information developed at the December 9 meeting in Albuquerque, the New Mexico Economic Development Commission adopted, on January 9, 1958, a resolution, which accompanies this statement. It is requested that the resolution be introduced into the record and made a part thereof.

Chairman DURHAM. Without objection, it will be.

(The document referred to follows:)

NEW MEXICO ECONOMIC DEVELOPMENT COMMISSION

RESOLUTION

Whereas it has been publicly reported that Hon. Jesse C. Johnson, Director, Division of Raw Materials of the United States Atomic Energy Commission, in an address to the Atomic Industrial Forum in New York City on October 28, 1957, stated that:

"We have arrived at the point where it is no longer in the interest of the Government to expand production of uranium concentrate. * * * The commission at this time is faced with limiting commitments for additional domestic uranium production."

and

Whereas the Uranium Institute of America has stated that:

"Recent statements concerning uranium and atomic energy have stimulated a great deal of speculation and anxiety as to the future markets for uranium."

and

Whereas information provided this commission by members of the uranium industry—at the Economic Development Commission meeting held in Albuquerque, N. Mex., on December 9, 1957, the United States Chamber of Commerce's Symposium on Future Markets for Uranium held in Denver, Colo., on December 16 and 17, 1957, and on numerous other occasions—leads this commission to believe that the anxiety felt by the uranium industry is justified; and

Whereas the uranium industry is, and will continue to be, of substantial economic value and importance to the State of New Mexico; and

Whereas the New Mexico Mining Association, on November 8, 1957, adopted the following resolution:

"We deplore the recent announcements of the United States Atomic Energy Commission that further contracts for the purchase of domestic production of uranium concentrates will be curtailed.

"As a result of such policy many operators in newly developed areas will be unable to find a market for their ores. Therefore, it is strongly urged that the Commission provide adequate remedial measures for such cases.

"We further urge that the Commission purchase domestic ores and concentrates when they are available rather than to purchase the same from foreign sources."

and

Whereas the uranium industry is also disturbed about the policy of classification and secrecy that surrounds purchasing procedures and administrative matters of the Atomic Energy Commission, particularly regarding the purchase of uranium from foreign countries: Be it, therefore

Resolved, That in the interest of the economic welfare of the citizens of the State of New Mexico, the representatives of the people of New Mexico in the Senate and the House of Representatives of the Congress of the United States be requested to call upon the Joint Congressional Committee on Atomic Energy to hold public hearings for the purpose of clarifying the policies of the United States Atomic Energy Commission and protecting the interests of the uranium industry in New Mexico to the fullest possible extent; and be it further

Resolved, That the Joint Congressional Committee on Atomic Energy be urged to give prompt consideration to the following recommendations of this commission:

1. The formulation of a Government program to encourage exploration for further uranium reserves essential to our national security such as giving (*a*) prompt repayment of successful drilling costs; (*b*) an advance payment, on a sliding scale, of from 50 cents to $50 per ton for ore ranging from 0.10 percent to 10 percent; (*c*) a subsequent yearly advance payment, on a sliding scale, of from 5 cents to $5 per ton for ore ranging from 0.10 percent to 10 percent; and, (*d*) that these advance payments be reimbursed to the Government out of operating profits when the ore is mined.

2. An adjustment of the conflict in policies of Federal agencies regarding Federal claims and Indian leases whereby one agency of the Government requires claimants and lessors to do certain exploratory and development work while another agency of the Government prohibits the marketing of ore from the claims and leases.

3. That urgent consideration be given to the authorization of a Grants-Ambrosia Lake area cooperative custom mill to provide a market for established uranium ore bodies in the area not now committed to any mill, thereby preventing further injury to the operators who are in no position to finance exploration and development and carry reserves on an uncertain and long-term basis; and be it further

Resolved, That copies of this resolution be forwarded to Senator Dennis Chavez, Senator Clinton P. Anderson, Congressman John J. Dempsey, Congressman Joseph M. Montoya, the Honorable Lewis L. Strauss, Chairman of the United States Atomic Energy Commission, the Honorable Jesse C. Johnson, Director of the Division of Raw Materials of the United States Atomic Energy Commission, the New Mexico Association, the Colorado Mining Association, and the Uranium Institute of America.

NEW MEXICO ECONOMIC DEVELOPMENT COMMISSION,
JAMES H. RUSSELL, *Chairman*.

Attest:

JACK WENTWORTH, *Director*.

SANTA FE, N. MEX., *January 9, 1958*.

Mr. WENTWORTH. I would like to quote briefly from the resolution:

Whereas information provided this Commission leads this Commission to believe that the anxiety felt by the uranium industry is justified.

And, quoting again from the resolution:

Resolved, That in the interest of the economic welfare of the citizens of the State of New Mexico, the Representatives of the people of New Mexico in the Senate and the House of Representatives of the Congress of the United States be requested to call upon the Joint Congressional Committee on Atomic Energy to hold public hearings for the purpose of clarifying the policies of the United States Atomic Energy Commission and protecting the interests of the uranium industry in New Mexico to the fullest possible extent.

The New Mexico Economic Development Commission endorses the recommendation adopted by the Uranium Institute of America on February 5, 1958, for a Government-industry evaluation committee. This recommendation reads as follows:

In order to facilitate the transition to free enterprise and to achieve closer cooperation between the Atomic Energy Commission and the uranium industry—in which responsibilities are shared by both public and private bodies—we recommend the establishment of a committee of representatives from management levels of the uranium producing industry and of the Atomic Energy Commission; this committee to concern itself with general problems of industry and government * * *

In closing, I would like to quote briefly from a statement made on February 21, by Gov. Edwin L. Mechem of New Mexico.

> New Mexico has been in the fortunate position of contributing substantially to the President's atoms-for-peace program. During the past 2 years, we have developed 70 percent of the Nation's proved uranium reserves.
>
> We are of course interested in seeing that the people who have shown such confidence in the mineral wealth of New Mexico are able to find markets for their ore, and we recognize that this must be done in conjunction with the development of these peaceful uses which hold such great promise for our Nation. We therefore support the Atomic Energy Commission in its vigorous effort to develop these applications and confidently look forward to the rapid development of this new tremendous source of energy.

Chairman DURHAM. Thank you very much, Mr. Wentworth, for an excellent statement.

Mr. WENTWORTH. Thank you.

Representative PATTERSON. Mr. Wentworth, approximately how many people are employed, for instance, in the State of New Mexico, in the mining industry there?

Mr. WENTWORTH. In the uranium mining fields?

Representative PATTERSON. Yes.

Mr. WENTWORTH. I would like to ask one of the succeeding witnesses to answer that.

That will be Mr. Ed Brosseau, I think, who operates in the Ambrosia Lake area. He could give an accurate figure on that. I am not being evasive, but I believe he knows more about it than I do.

Representative PATTERSON. Thank you.

Chairman DURHAM. Are there any further questions?

Representative DEMPSEY. I have no questions.

Representative JENKINS. In the middle of the first page, you give some figures there, and those figures, I presume, are accurate and well prepared. They are really well worth while.

Mr. WENTWORTH. Sir, I verified this statement with the Land Commissioner before departing Friday, and he confirmed them.

Representative JENKINS. Thank you.

Chairman DURHAM. Thank you very much, Mr. Wentworth. The next witness is Mr. Brosseau, president, Westwater Corp., Santa Fe, N. Mex.

STATEMENT OF J. E. BROSSEAU, PRESIDENT, WESTWATER CORP., SANTA FE, N. MEX.

Mr. BROSSEAU. Mr. Chairman and members of the committee, I have come before this committee to make a request for facts; namely, sufficient information so that I may recommend to my board of directors and stockholders a course of future action.

In other words, we are confronted with the problem of whether we should stay in the uranium business or place our capital in other ventures.

If we have uranium reserves in excess of the forecasted future demands, we would like to have the Atomic Energy Commission tell us so.

Chairman DURHAM. I think you are entitled to that.

Mr. BROSSEAU. Our problem is unlike other mining businesses. We have but one buyer for our product, the United States Atomic Energy

Commission, who due to security reasons has maintained considerable secrecy about future demands.

In the uranium business we are at the threshold of another power, a power as vitally important as the discovery of oil years ago. For uranium is not only the key to a better way of life, but it is necessary to keep our country safe from aggression.

Capital for prospecting and initial exploration has come from thousands of private investors that had put their faith in a new business in hopes that they would eventually obtain a good return on their investment.

With the recent announcement by the Atomic Energy Commission curtailing the purchase of uranium concentrates, these same investors have come to the conclusion that uranium is a glut on the market and is no longer in demand. The result being that risk capital for uranium exploration is no longer available.

On October 28, 1957, Mr. Jesse Johnson stated:

> The power programs being undertaken or considered by European nations are based upon 5- to 10-year construction plans. A reasonable assurance of an adequate supply of nuclear fuel is essential to the initiation of such programs. Therefore, if we are to achieve the atomic power development anticipated in the next 10 to 20 years, uranium exploration and development should continue on a broad scale. The uranium producers cannot be expected to finance the development of ore reserves for future production without a present market and confidence in the future.

In December, Mr. Charles G. Manly, Chief of the Commercial Development Branch of the Division of Civilian Application of the Atomic Energy Commission stated:

> Nuclear powerplants depend on fissionable material as fuel; they are not easily or cheaply converted to using coal or oil. The point is that before the utility industry can do more than explore nuclear energy it must have assurance of adequate uranium reserves.

The problem facing us today is whether there is enough uranium that we can depend upon for future planning or is there a possibility that the South African ore, constituting a third of the free world uranium reserves, could possibly fall into Communist hands.

If there is too much uranium, it is my belief that the Atomic Energy Commission should inform us of the fact.

But, assuming that Mr. Johnson and Mr. Manly are correct in their statements, the Atomic Energy Commission should change its policy, or Congress should pass legislation to provide an incentive for exploration.

One possible solution that has been suggested is that loans be made against ore reserves in the ground that are considered to be within a minimum grade, tonnage, and depth; namely, any proven deposit that would make an economical mining operation.

These loans to be repaid out of future production.

It is hoped that you, as members of the Joint Congressional Committee on Atomic Energy, with a vital interest in the future of the atomic energy industry and our national defense, will do everything in your power to enable the uranium story to become a page in history that will reflect the farsightedness of our times.

Ten years ago a trip to the moon was a dream; today it is fast becoming a reality.

Chairman DURHAM. It will probably take uranium to get there, too.

You mentioned one possible solution at the bottom of page 2. What do you think of that suggestion? You did not comment on it.

Mr. BROSSEAU. Well, sir, it is a means of building up reserves. There are a lot of bottlenecks to it. It has possibilities, but it has a terrific potential, also.

I believe that some of the gentlemen that are following me probably will go into greater detail on it.

Chairman DURHAM. I was just thinking, of course, there is a lot of difference. To meet emergency, you have to have something. If you have to take it out of the ground, it is entirely different from having it above ground and having it already processed. In this way you would not have a quick way of getting uranium 235 or whatever you desire.

Mr. BROSSEAU. Well, sir, it is a means of acquiring reserves which, if we should lose Africa, there is a third of the free-world reserves lost.

As we know, the Ambrosia Lake area of New Mexico constitutes roughly 70 percent of the United States reserves. It is possible through some means of sabotage; let us assume that an enemy agent, even though we are not in a state of war, could make the Ambrosia Lake area radioactive and therefore completely knock out that whole field.

Chairman DURHAM. Are there any questions?

Representative DEMPSEY. Yes; I would like to ask some questions.

Your organization has sufficient money to take care of your ores?

Mr. BROSSEAU. Yes, sir; we are a spin-off organization from another company. We are in the process of drilling and exploring for uranium. We are tied in with the Homestake-Sapin mill and with the Homestake Mining Co. At the present time we have about 300,000 tons of ore reserves, but we hope for more.

Chairman DURHAM. How much money have you spent?

Mr. BROSSEAU. Homestake Mining Co. is presently spending the money. We have a few other sections which we are developing on our own. Those are the sections which we are worried about.

Chairman DURHAM. Thank you very much.

Mr. BROSSEAU. Thank you, Mr. Chairman.

Chairman DURHAM. The next witness is Mr. Don Lohbeck, executive vice president of Thor-Westcliffe Development, Inc., Santa Fe, N. Mex.

STATEMENT OF DON LOHBECK, EXECUTIVE VICE PRESIDENT, THOR-WESTCLIFFE DEVELOPMENT, INC.

Mr. LOHBECK. Mr. Chairman and members of the committee, the problem which the uranium industry faces as a result of the limitation of uranium purchases has been described frequently and well. Spokesmen for the Atomic Energy Commission have stated the situation clearly. On October 28, 1957, Mr. Jesse Johnson said:

> We now estimate domestic ore reserves at about 70 million tons, averaging about 5 pounds of uranium oxide per ton. A year ago our ore reserves were 60 million tons, 2 years ago 24 million tons, 3 years ago 10 million tons, and 4 years ago 5 million tons.

Then he added:

*** * * it is no longer in the interest of the Government to expand production of uranium concentrate.**

and

It would be undesirable from the standpoint of industry as well as the Government, to expand the uranium-production rate beyond currently projected requirements * * *.

On December 16, 1957, Mr. Elton Youngberg, of the Grand Junction office of the Atomic Energy Commission, explained:

Because of the rapid growth of reserves * * * the production potential of the uranium industry may now equal or exceed foreseeable firm requirements. This has necessitated statements in regard to future contracting policies * * *.

To the uranium industry, the situation was an obvious one, relying on Government demands for more and more uranium, they had found too much.

The Government didn't want any more. But the Atomic Energy Commission did not stop there.

In his address on October 28, Mr. Johnson also said:

This reference to the current problem should not create the impression that we have too much uranium. The immediate objective is to keep production and requirements in reasonable balance, but the long-range problem is to develop additional ore reserves for our future requirements. We cannot deplete existing reserves and expect to meet future military and industrial needs.

Fundamentally, the problem facing the uranium industry lies in the contradiction of these two statements. The sole purchaser of uranium concentrates has stated that it has no interest in additional purchase contracts, but, at the same time, has called upon the uranium industry to continue to explore and develop additional ore reserves.

The concern of the uranium industry, of the Joint Committee on Atomic Energy, and I believe of the Atomic Energy Commission, is how to resolve this paradox. How to provide the necessary incentive to guarantee the continued expansion that will maintain America's position as world leader in the field of nuclear energy.

EFFECTS OF THE NEW POLICY

The effects of this new policy restricting further purchases of uranium concentrates were felt most quickly by those uranium companies which had developed their reserves, but did not have milling contracts. Two such companies, operating in the Grants-Ambrosia Lake area of New Mexico, have written as follows:

Company No. 1:

Some 145,000 feet of rotary and core drilling have developed an indicated reserves of about 200,000 tons of 0.23 percent U–308 ore. This ore body is now being developed. When the mine is fully developed the designed production capacity is 500 tons per day. Total investment to include land acquisition, capital expenditures, exploration, development, and mining is about $1,500,000. At the present time (we) have no market available for our ore.

Company No. 2:

This corporation is presently constructing the required plant for operation of a uranium mine * * * Proven reserves are in excess of 500,000 tons of commercial-grade ore. At present none of this ore is committed for processing.

The position of these two companies is typical of the position in which many of the men and organizations who in a brief 5 years

transformed the United States from a uranium-poor to a uranium-rich nation now find themselves.

They are typical of the men and organizations that the Atomic Energy Commission must depend upon to maintain our uranium reserves. But where is the incentive that will keep these men at work?

The effect of this new policy on the uranium producers, however, is just one part of a threefold problem. The other, and potentially more serious, phases are the effects of the limitation of expansion on: national security and the atomic power program.

NATIONAL SECURITY

The total reserves of U–308 in the free world are estimated to be 1 million tons.

The U–308 reserves in the United States approximate 205,000 tons, or only 20½ percent.

The preponderant bulk of the balance is in South Africa and Canada.

The United States is purchasing the uranium produced by these countries, and there has been no cutback announced regarding these purchases of foreign uranium.

In fact, Mr. John T. Sherman, Assistant Director, Domestic Procurement Division of Raw Materials of the Atomic Energy Commission, on December 16, 1957, said:

> Our commitments for the purchase of foreign uranium were negotiated during a period of domestic shortages. These are firm commitments which are not cancellable.

Inspired by the Government's demand for domestic uranium reserves, the American mining industry accomplished unprecedented success, they never imagined that it would be the American producer who would be penalized when domestic uranium reserves were discovered.

It would have been even more difficult to believe that the American miners and prospectors would have been halted at a time when the American productive capacity still occupied a position inferior to that of foreign nations.

Mr. Sherman, in the speech partially quoted before, admitted this situation when he added:

> The projected daily milling capacity of theses three countries when mills under construction are completed is estimated in the table below: South Africa, 61,500 tons; Canada, 42,000 tons; United States, 20,500 tons.

The United States, obviously, is in large part dependent upon foreign sources for the basic material of our national security.

Have we forgotten when Japanese forces overran the sources of supply of natural rubber? Have we forgotten the oil shortage in Western Europe during the Suez Canal trouble?

Have we not yet learned the dangers involved in depending upon a foreign sounce for a strategic material?

Would it not be wiser to consider, while there is still time to consider, if we are not placing ourselves in a position where at the moment our atomic strength might be most desperately needed we would be forced to institute a crash program for the expansion of atomic material production similar to the expansion of the missile program now being put into effect?

All Americans have been taught, with the expectation that they would profit from the knowledge, the proverb that for want of a horseshoe nail a kingdom was lost. In the distant future when our present struggle for leadership in the atomic age is dispassionately discussed will it be recited that for the want of an adequate atomic industry a republic of freemen was doomed?

THE ATOMIC POWER PROGRAM

The capacity to produce power is an accurate yardstick by which to measure the prosperity and strength of a nation. It was superior oil reserves that guaranteed the Allied victory in World War II; it was an oil deficiency on the part of the Axis Powers, coupled with the vast amounts of electric power available to American industry, that again assured an Allied victory in World War II.

Electric power is wealth, and in the world today an abundance of electric power is essential to survival as a major power.

The changeover to an atomic-power system is inevitable. It is only a question of time until uranium will be the prime source of power in the industrialized areas of the world.

However, even though this is not denied, disquieting signs are in evidence that indicate an inclination to postpone the transformation in the United States from a power system based on fossil fuels to a power system based on atomic fuels—while, at the same time, our Government is encouraging and assisting the building of atomic powerplants abroad.

The reasons for this, as stated by the Atomic Energy Commission in a press conference held on January 8, 1958, are:

> * * * here we have in our country ample supplies of fossil fuel for at least another generation. Our foreign friends do not. Therefore, there is an urgency to their program which does not exist with respect to our own requirements.

Few persons would object to our assisting the fuel deficient nations of Europe and elsewhere to achieve ample electric power through atomic installations; in fact, an abundance of power for industrial purposes is one of the best ways of strengthening and promoting free enterprise and self-government in other nations.

But it would be a foolish form of wisdom for the United States to contribute to the building of the rest of the world into the atomic age, while remaining ourselves outside.

The results of such a policy, using the past as an example, would be the same as if the United States instead of leading the world in the changeover to petroleum as the prime source of power had remained a coal-powered nation. There was no urgency about our changing from coal to oil. It was not necessity, but the vision of an ever-expanding future that forced the transformation.

It is dangerous for our position of world leadership to restrict or obliterate that vision today. It is as though we would say that since we have an abundance of bombers, there is no need to build missiles, and then to awaken to a world that has left us far behind.

Unless deliberately restricted, American engineering will soon make atomic power economically competitive with conventional power sources. It will become competitive with such suddenness that we may be unprepared to exploit the situation.

The Atomic Energy Commission, in an address by Mr. Charles Manly of the Division of Civilian Application, on December 17, 1957, admitted that:

> When the nuclear era does begin, its effect on the nuclear industry will be felt very soon * * * The rise of civilian power would be so great that in a short time the industry might be taxed to meet the overall requirements.

Electric power is the lifeblood of our Nation. Private industry, unless restrained by governmental edict, will never cease the search for cheaper, more efficient, more abundant sources of electric power. This is true of uranium fueled atomic power, as the Chairman of the Atomic Energy Commission, in a press conference, January 8, 1958, recognized:

> I am encouraged by the fact that instead of there being a reduction in the interest of private industry in the power program, it seems to me to be accelerating.

The recent announcement by the Pacific Gas & Electric Co. pertaining to the proposed reactor at Eureka, Calif., is another sign of the readiness of private industry to participate in the changeover to an atomic-power system.

But without an abundance of atomic fuel—uranium—an atomic-power program of nationwide scope will remain an unfulfilled dream of the future.

A SOLUTION IS NEEDED

In his speech of October 28, 1957, Mr. Johnson recognized that the new policy of the Atomic Energy Commission would create problems of far-reaching importance. He stated:

> Therefore, if we are to achieve the atomic-power development anticipated in the next 10 to 20 years. uranium exploration and development should continue on a broad scale. The uranium producers cannot be expected to finance the development of ore reserves for future production without a present market and confidence in the future.
>
> The Commission's domestic concentrate program assures this country a major uranium-producing industry through 1966. The problem now is to provide an incentive for maintaining our ore reserves at approximately existing levels through replacement, by exploration and development, of the ore being mined. Much of this incentive will have to come from confidence in the future market for atomic power.

How to provide a continuing incentive to the uranium producers to guarantee the exploration and development work needed to maintain uranium reserves at a satisfactory level?—that is the crux of the problem.

The only incentive that can be provided is an opportunity to market the uranium that is discovered and mined. The search for uranium, as Mr. Johnson said:

> * * * will continue only as long as there is a favorable outlook for the uranium market.

This is the very incentive that has been withdrawn by virtue of the curtailment of Government purchases.

If we continue to depend upon a foreign source of supply for the bulk of our uranium requirements, while forcing our domestic producers to limit production and withdrawing the incentive for additional exploration and discovery, we are indeed planning for the atomic age from a "very narrow base."

Some awfully positive steps have recently been taken in a field where there is neither experience nor precedent to lean upon for guidance.

For example, Mr. Manly, in his December 17 speech, said:

> The question is, of course: "When will civilian requirements added to military requirements begin to raise the level of the planned AEC purchasing program?" There is no factual answer to this question today.

But the Atomic Energy Commission has answered that question by saying that the productive capacity of the American uranium industry is, as presently authorized, capable of meeting the foreseeable requirements.

In brief: the American mining industry, in an amazingly short period of time, provided the United States with the largest high-grade uranium reserves in the world. However, since foreign commitments will account for approximately 60 percent of American uranium purchases, and since the Atomic Energy Commission believes that the amount of U–308 presently contracted for is sufficient to maintain a balance between production and need, the American producer is being penalized for his success by the new policy of the Atomic Energy Commission of making no further contracts for purchases by the Government of uranium concentrates.

It would be better for America's future and more in harmony with the American character if, instead of calling a halt on the uranium industry because it has found an abundance of ore, the ingenuity and energy of the atomic industry would be expended on increasing the market for atomic fuels by increasing the uses for atomic fuels;

If, instead of depending on foreign sources for uranium production, we would give first thought to building a comprehensive uranium-producing facility within our own borders;

If, instead of depending on our own more primitive fuels for the production of power while the rest of the world moves toward a changeover to atomic power, we would make sure that the United States continues to lead the world in exploiting technological advances;

If, instead of freezing the uranium market by Government curtailment of purchases, we would expand the market for uranium by allowing private sales to private industry.

The problem that the uranium industry faces is recognized by all parties. The effects of the situation on the mining industry, national security, and the atomic power program are obvious. The need for a solution to the problem is pressing.

THOR-WESTCLIFFE DEVELOPMENT, INC.'S, PROPOSAL

After consulting with numerous uranium companies affected by the new AEC policy, and with utility companies interested in expanding the atomic power program, Thor-Westcliffe Development, Inc., has petitioned the Atomic Energy Commission for the necessary licenses, permits and contracts, to do the following:

1. Construct a 1,000-ton-per-day-capacity custom uranium mill in the Grants-Ambrosia Lake area of New Mexico, with the Atomic Energy Commission contracting for the purchase of 50 percent of the production of this mill,

2. Sell 50 percent of the production of this mill on the open market both in the United States and abroad—

as at least a partial solution to the problem that plagues the uranium industry.

The following table, issued by the Atomic Energy Commission, shows the geographical distribution of uranium deposits in the United States:

Ore reserves by districts, Nov. 20, 1957

Area	Tonnage	Percent U-308
Grants	51,400,000	0.26
Gas Hills-Crooks Gap	7,200,000	.26
Big Indian Wash	3,800,000	.43
Uravan Mineral Belt	3,500,000	.31
Monument Valley-White Canyon-Red Canyon-Deer Flats	1,900,000	.32
Others	6,000,000	.25
Total	73,800,000	.27

This table shows that approximately 70 percent of the uranium reserves in the United States are to be found in the Grants-Ambrosia Lake area.

Mr. Johnson, on October 28, said:

If we eliminate an area in New Mexico that could be included in a circle having a 15-mile radius, we would have only about a 3-year ore supply at the 1959 production rate.

In this area of vast uranium deposits, there are now two classes of ore owners: those that have milling contracts, giving them a guaranteed market at a guaranteed price; and those without milling contracts, leaving them with no place to sell their ore and no incentive to search for additional reserves.

It is this latter category, the independent producer, the custom shipper, who needs relief.

The Atomic Energy Commission has, to a degree, acknowledged this.

I am concerned—

said Mr. Johnson, on February 7, 1958—

over the problems of those who already have developed ore at substantial expense and who as yet may have no adequate market for their ore.

And Mr. Youngberg, on December 16, 1957, stated:

To broaden the participation in the industry as much as possible, the Commission has followed a practice of contracting for mill capacity for custom shippers * * * for economic reasons, it is reasonable that the custom shipper should have a larger percentage because he cannot extend the production of his smaller reserves economically over as long a period of time.

The milling capacity contracted for, and allocated to the custom shipper in the Grants-Ambrosia Lake area approximates 1,000 tons per day, but most of this allocated capacity, for various reasons, will fall into the hands of a few producers.

It is not, at any rate, a sufficient milling capacity to service the independently owned ore in the area.

Thor-Westcliffe Development, Inc., has no uranium properties in the Grants-Ambrosia Lake area. The mill we propose to construct

would be a 100-percent custom mill, for the benefit of those producers who have no present outlet for their ore.

An unfortunate byproduce of the new Atomic Energy Commission policy is that it tends to create an atmosphere in which a monopoly could thrive. A single purchaser, a restricted processing capacity, limited room for the independent producer, all of these conditions work against the chances for survival of the independent producer who has no mill connections.

A 100-percent custom mill serving all of the independent producers would provide:

1. An outlet for presently developed, but unmarketable ores;
2. An incentive for further exploration and development work.

However, we are convinced that the best way to assure stability in the uranium industry, and to guarantee an expansion of the industry, is to develop a broad civilian market for atomic fuels. A civilian market will be a private market.

Thor-Westcliffe Development, Inc., is primarily interested in the opportunity to sell atomic fuels on a private market, but we do not believe that it would be to the future best interests of the uranium industry to create a situation where, side by side, there existed certain uranium mills selling exclusively to the Government and other mills selling exclusively on an open market.

Therefore, we have asked that the Atomic Energy Commission agree to purchase for governmental uses 50 percent, but only 50 percent, of the production of this 100 percent custom mill.

AN OPEN MARKET

The market for fissionable material, other than the amounts required for American military purposes, will consist of two distinct potential purchasers, American private industry and foreign countries.

On the question of the needs of private industry, Mr. Manly of the Atomic Energy Commission has said:

> The question is, of course: "When will civilian requirements added to military requirements begin to raise the level of the planned AEC purchasing program?"

This statement still envisions the United States Government as the sole purchaser of uranium, probably acting as the dispenser of atomic power source material to private industry.

Mr. Sherman, in another statement, has come closer to a more practical method under the American system of free enterprise:

> It is to be hoped that the uranium market will gradually change from a market dominated by a single buyer to a private market with a number of buyers and producers.

The uranium industry is about to enter a period of transition from a Government-dominated market to a free market, the best interests of the industry require that this transition be made as quickly as possible.

The Atomic Energy Commission seems to be seeking a method for accomplishing this transition. Again from Mr. Sherman's address December 16, the Commission said:

> If power requirements, domestic and foreign, should require substantial additional uranium supplies, we will move from a market based solely on govern-

mental purchases to one that will consist at least partially of a competitive market. For the first time the laws of supply and demand will be brought into play. It is expected that domestic producers will be permitted to deal directly with the consumer, either private or governmental, subject to appropriate licensing.

Furthermore, the Atomic Energy Commission has tried to inspire the uranium producers to look forward to the day of a private market. Mr. Sherman added:

I am confident that domestic producers will be able to get their share of the business in a competitive market.

Then there is the potential foreign market. If any good is to be derived from the fact of American importation of the uranium produced abroad, it is that foreign sources will have to buy the processed uranium that they need from the United States, and foreign countries, moving toward a changeover to atomic power, will need atomic fuels. This market, according to Mr. Manly of the Atomic Energy Commission, should be supplied by American producers. On December 17, he said:

Some of these countries, particularly in Western Europe, will have to import uranium to fuel their reactors. I see no reason why you should not anticipate at least a portion of that future market if you go after it.

Now is the time for the Atomic Energy Commission to implement all of these words by granting the authorization necessary to enable American firms to enter this foreign market.

We believe that a market, other than the United States Government, already exists. Thor-Westcliffe Development, Inc., has requested the necessary licenses to enable it to sell 50 percent of the production from it proposed mill on the open market.

In fact, we are ready to sell uranium concentrate now, but when we asked the Atomic Energy Commission for the right to purchase some of its U–308 for resale, we were advised that the Government has none to sell.

So, to be guaranteed a source of supply of the commodity we wish to sell, it is apparent that Thor-Westcliffe Development, Inc., must have its own processing mill.

This committee of Congress, if its recommendations are to be of long-range value, must direct its attention not only to the immediate problems of the uranium producers who have been left helpless by the curtailment of purchases, but must look also to the methods by which the uranium industry can be given a greater market to supply. That is, by giving incentive to the growth and development of a nationwide system of atomic powerplants, and by giving the uranium industry an opportunity to move into a free market.

We believe that the proposal made by Thor-Westcliffe Development, Inc., for a 100 percent custom mill, with the Atomic Energy Commission purchasing only 50 percent of production, and with the remaining 50 percent made available to a private market, can become a pattern for future negotiations and provide a precedent in the inevitable transition from a Government-dominated market to a private market in conformation with the traditional American free enterprise system.

Chairman DURHAM. Thank you very much.

Mr. Dempsey.

Representative DEMPSEY. How much ore do you and your associates control?

Mr. LOHBECK. We control none, Mr. Dempsey, but in conferences with the uranium companies in the Grants-Ambrosia Lake area, we have been assured of a supply of approximately two and a quarter million tons as of now of ore that is in various stages of development, not speculative.

Representative DEMPSEY. Is that ore owned by people who do not have milling facilities?

Mr. LOHBECK. That is true. Just these two companies whose correspondence I have read have at this time approximately a million tons between them for which they have no milling contracts whatsoever.

Chairman DURHAM. When was the application made?

Mr. LOHBECK. Three weeks ago.

Chairman DURHAM. Are there any further questions?

Thank you very much, Mr. Lohbeck.

Mr. LOHBECK. Thank you, Mr. Chairman.

Chairman DURHAM. The next witness is Mr. Richard D. Bokum, president of the Sabre-Pinon Corp. of Santa Fe, N. Mex.

You may proceed, Mr. Bokum.

STATEMENT OF RICHARD D. BOKUM II, PRESIDENT, SABRE-PINON CORP., SANTA FE, N. MEX.

Mr. BOKUM. Mr. Chairman, I submitted my statement. I would like to have it placed in the record.

Chairman DURHAM. Without objection, it may be placed in the record.

(Statement referred to follows:)

STATEMENT PREPARED BY RICHARD D. BOKUM, PRESIDENT, SABRE-PINON CORP.

My name is Richard D. Bokum. My residence is Santa Fe, N. Mex. I am the president of Sabre-Pinon Corp., and I have stock interests in other corporations operating in the Grants, N. Mex., area.

My purpose in coming to Washington is not so much to criticize the actions of the Atomic Energy Commission, but is to bring out some of the problems of the uranium industry and present several ideas which, I believe, will solve the industry's problems.

A uranium operation, which includes both mining and milling, takes a great deal of money and mining know-how to get into operation. As an example, Sabre-Pinon Corp., in partnership with Homestake Mining Co., is spending $9 million on a 1,500-ton-a-day mill and $8 million for mine development and working capital. This, of course necessitates the confidence of financial institutions in, not only a company's managerial continuity, but also its financial responsibilities. The vast majority of the uranium ore discovered to date has been found by individuals and small corporations without continuity of management and without a record of financial responsibility. Therefore, the individual and small corporation must combine with large oil or mining corporations to develop their properties. Under these circumstances it is necessary for the individual and small corporation to realize income from their uranium operation as soon as possible in order to exist. There is not so much need for the major corporations to do this, as they derive income from their other nonuranium operations.

The Atomic Energy Commission on October 28, 1957, issued a policy statement which, in effect, stopped all exploration and development for uranium in this country by the individual and small corporation by restricting the sale of uranium ore to existing milling contracts. I noticed a statement made by a staff member of the Atomic Energy Commission to the Western Mining Con-

ference in February 1958 that the ore reserves of this country were now placed at 100 million tons and not 70 million tons as previously indicated in the Atomic Energy Commission's policy statement of October 28, 1957. This is, of course, an indirect and incorrect answer to the uranium industry's statements that the exploration and development for uranium has ceased. There are many ways of figuring ore reserves and I do not believe the Atomic Energy Commission has ever been realistic in their approach to this problem. In the Grants, N. Mex. area there are approximately 12 drilling rigs operating at the present time in exploration and development work; this work was contracted for prior to October 28, 1957. Before the policy statement of the Atomic Energy Commission there were as many as 40 to 50 drilling rigs operating in this same area. The facts speak for themselves and I believe I know enough about the industry that I have been connected with since its inception to know that there has been little expansion in ore reserves from November 1957 through February 1958.

There are two things which I would recommend that would insure aggressive exploration and development in the uranium industry.

1. That the Atomic Energy Commission assure all individuals and corporations, both large and small, which are active in the search for uranium, milling capacity for any ore discovered over a 10-year period. Therefore, a company requesting milling capacity, either by increasing the capacity of an existing mill or by building a new mill, would have to have a 10-year supply of economical, blocked-out ore behind every ton of milling capacity requested. This would not, as the Atomic Energy Commission infers, deplete our uranium reserves in 10 years, as it takes a great deal of time to block out uranium ore. This development would be going on for as long as there is a need for uranium and it would assure the United States of an active exploration program and an adequate supply of uranium ore.

2. To cease buying foreign concentrates at a much higher price than exists in this country as soon as the contracts with Canada and South Africa expire. This foreign production could not compete with us on a free market and in substance, the contracts as they are written at the present time are a disguised form of foreign aid.

Probably the greatest harm to the uranium industry as a whole that the Atomic Energy Commission has accomplished in the last few months has been the destruction of the public confidence in our business. They have inferred that uranium is a glut on the market and to insure a strong industry, this confidence must be restored. It takes a great deal of time to overcome the effects of one ill-advised statement and our industry, to operate effectively, must be assured of a policy that everybody understands, one not obscured by false security regulations. It must be a policy that will give incentive to the individual and small corporation, the people who have made the uranium industry what it is today.

Mr. BOKUM. I would like to talk extemporaneously because a lot of what is in my statement has already been said by the other witnesses either from Wyoming or New Mexico.

I started in the Grants, N. Mex., area back in 1952 or 1951 when the uranium business started in the United States. The companies that I have been associated with have discovered about 30 percent of the known ore in that area.

I would like to bring up one example of a problem that is confronting us in the Grants, N. Mex., area now where we have a conflict between two Government agencies.

Prior to Mr. Johnson's speech in October, the Interior Department, through Mr. Glen Emmons, the Commissioner of Indian Affairs, held a bid on Navaho Indian allotted land. This was in September, the latter part of September 1957. A company that I am associated with bid $287,000 in bonus on 15,500 acres of Indian allotted land. We put up $67,000, or 25 percent of the bonus price with our bid, and were to have put up an additional $218,000, which is the 75 percent balance due, on November 5. On October 28, Mr. Johnson made his speech.

Representative DEMPSEY. Were you the successful bidder?

Mr. BOKUM. We were the successful bidder on this 15,500 acres.

Representative DEMPSEY. How many people bid?

Mr. BOKUM. There were about 12 or 15 companies that bid at this sale. We were to have placed the other 75 percent in the hands of the Interior Department on November 5. The Interior Department lease states that we must pay the Interior Department or the Indian a dollar an acre rental per year, and spend $10 per acre per year in exploration and development, and if we find ore, we must mine it diligently since the Indian derives his income from 10-percent royalty from the gross sale of the ore found.

Under Mr. Johnson's statement, we were unable to proceed or live up with the contract of the Interior Department, and we got an extension from Mr. Chilson, the Under Secretary, until March 5, in the hopes that something would be done by the AEC that would clarify the situation.

The only way the Indians can become citizens of equal standing is to develop their natural resources. This is the way the Navaho, probably the poorest Indian race of all, could have derived income.

Chairman DURHAM. Does that apply to the whole tribe, or only those that own the land described by the lease?

Mr. BOKUM. This was allotted land so the individual Indian family would have derived the income. It would not have been the tribe itself, but there are about a thousand Indian families involved in this particular sale.

Chairman DURHAM. A thousand families of Indians involved out of how many families altogether? Do you happen to know the number?

Mr. BOKUM. I don't know the total number of families. I do know there are about 87,000 Navahos at the present time and I suppose there would have been involved about 15,000 in this Indian sale. That would be my estimate.

Representative DEMPSEY. The 87,000 Indians he is talking about, part of them are in Arizona?

Mr. BOKUM. That is right.

Representative DEMPSEY. How many are there in New Mexico?

Mr. BOKUM. I am not positive of that.

Representative DEMPSEY. I think it is about half.

Mr. BOKUM. I think we have about half. We have one department telling us we have to mine it and another department saying we can't mine it.

Representative DEMPSEY. Did I understand you to say that you were paying $10 per acre for exploration and development?

Mr. BOKUM. They require that per year per acre.

Representative DEMPSEY. You have 15,000 acres; that is $150,000 a year?

Mr. BOKUM. Yes, sir; we have to spend that each year.

Chairman DURHAM. That goes directly back to the Federal Government?

Mr. BOKUM. No, that goes directly to the Indian through the Interior Department, sir. Then they get 10 percent royalty on any gross ore mined.

Chairman DURHAM. They get 10 percent royalty and the $10 per acre?

Mr. BOKUM. No, the $10 per acre goes into exploration and development on their land per year. They receive the bonus which we bid, which was $287,000.

We have an extension from November 5 to March 5 to pay the 75 percent, since we could not in all good honesty sign any agreement with the Interior Department which the AEC prohibits us to live up to. If we cannot live up to it, we can't mine it, we know that; they have told us so.

Chairman DURHAM. You have a signed contract?

Mr. BOKUM. We would have to sign a contract.

Chairman DURHAM. Have you got a signed contract now?

Mr. BOKUMM. With the Indians?

Chairman DURHAM. Yes.

Mr. BOKUM. We were successful bidder on their land, sir, but we could not sign the contract because we could not live up to it.

Chairman DURHAM. I see.

Representative DEMPSEY. You have the money available in the bank to pay $218,000 or something and your contract is to pay interest on that until such time as it is delivered to the Indians?

Mr. BOKUM. That is correct, sir.

What we got from the Under Secretary was, we placed $350,000 into this corporation to bid on this land, which we have available today. We got a letter from the bank to Mr. Chilson showing that this money was available. He said that he would extend payment or allow us not to pay the money until March 5 until something is worked out, but we are paying interest on $218,000.

We gave the Indian Commissioner 4 percent on the money from November 5 to March 5.

I have two suggestions which might help in solving the industry's problems. One is that I believe any corporation, large or small, or an individual, should be permitted milling capacity so that he can mine out the ore that he discovered over a 10-year period.

Now, this would mean that a corporation or an individual would have to have a 10-year ore supply behind each ton of milling capacity that he requests from the AEC. It does not mean that this milling capacity would grow by leaps and bounds because it takes a great deal of time and a great deal of effort.

Chairman DURHAM. How long does it take to build a mill?

Mr. BOKUM. It depends on how long it takes you to negotiate with the AEC. It took Sabre-Pinon over a year. But it takes a year to build one and it takes 2 or 3 years to develop an ore body of major size. So you are not talking about increasing the milling capacity overnight if you granted a 10-year mine-out on a property that was developed.

Secondly, we are now paying South Africa, Canada, a great deal more money than we are receiving for our products.

I read Mr. Johnson's statement where he says they are paying $9.20 or $9.50 per pound of yellow cake, but I know that we negotiated our contract in 1957 and we are receiving $7.79, which is below the $8 minimum price that the Atomic Energy Commission guaranteed between 1962 and 1966. We get amortization on top of that, so actually our price is a little bit over $8, but it does not come anywhere near the $9.20 or the $9.50 that he said was the average for American uranium concentrate.

When we negotiated with the Atomic Energy Commission, we negotiated against the last contract that was signed. It was not a negotiation between the Atomic Energy Commission and my company. It was a negotiation against the contract that was signed, and the one that we signed had to be lower than the one that was signed previously. So each contract that has been signed in the last year and a half has been a lot less than the one previous.

Mr. TOLL. How did you know the price of the previous contract?

Mr. BOKUM. We found out since. At that time, we did not know. It was all security and we could not divulge our negotiations with anybody else and they could not divulge theirs. Since that time it has become public knowledge.

We were told by the AEC that so and so signed for this, that they made a commitment to take so much money, and that we had to take that or had to take less. That was part of our negotiations with the Atomic Energy Commission.

The two suggestions that I make are to allow the individual a 10-year mineout on ore discovered and to cut down on foreign ore, which is nothing more than foreign aid in a disguised form.

And third, that the Atomic Energy Commission has destroyed the confidence in our business. And this confidence must be restored if we are going to get exploration and development in the future.

One ill-advised statement will go a long way, or has gone a long way, in destroying our business. People now consider uranium a glut on the market and you have very little interest in any one of the uranium companies today, in the public's mind.

If we are going to get exploration and development in the future, we must restore the confidence of the public in our business.

Mr. TOLL. On your first suggestion, would you require that the person making the proposal own the ore, himself, or the 10-year supply would come from other people as well as his own reserves?

Mr. BOKUM. A person that discovers enough ore, let us say—well, in the first place it is not feasible to build a 200-, or 300-, or 400-ton-a-day mill today, with the price you get.

Secondly, it is almost mandatory now that a person, to make money in this business, must own the ore in the ground and the mill. He has to have both properties to make money since the price has been lowered so much.

Mr. TOLL. The previous witness does not own any ore, but wants to build a mill. Would you recommend any such proposal?

Mr. BOKUM. Well, I would not say that I would not recommend it. I would not want to invest in it, I will say that. I do not think the money is there unless he can negotiate a far better price than we were able to.

There is a need for custom milling, because there are small ore deposits that would never warrant an expansion of an existing mill or a mill of its own. There is in these contracts 15 percent built in for custom ore, in every contract signed by the Atomic Energy Commission. Sabre-Pinon has that provision in its contract.

There is a provision in all of them for either 15 or 20 percent for custom ore. And there probably is room for a custom mill, complete custom mill, to take care of the small operator that develops anywhere from fifty to two hundred thousand tons of ore. But a man developing anywhere from 500,000 up to 2 million tons should be able

to go to an existing mill and say, "Well, we can increase the capacity of the mill by, let us say, 350 tons a day," and be able to retain ownership through the mill of his ore.

Representative DEMPSEY. What is your proposition to the Atomic Energy Commission?

Mr. BOKUM. In what, Mr. Dempsey?

Representative DEMPSEY. To get a mill. You are trying to get a mill, are you not?

Mr. BOKUM. The corporation that I am president of, in partnership with the Homestake Mining Co., has a mill. I am the largest stockholder in another corporation that has developed over a million tons. It does not have a mill and I am the only stockholder in the corporation that bid on Indian lands, and I cannot sign the contract in good faith because I cannot live up to the terms of what Mr. Johnson said in October.

Representative DEMPSEY. If you could live up to the terms of the Indian contract, then what would you suggest?

Mr. BOKUM. My suggestion on the Indian contract is, this business is a gamble and always has been. There is no assurance that if I go out and spend a half million or a million dollars on the Indian land that I am going to find ore, but if I am going to spend a million dollars and try to develop ore, I have to have an outlet.

If the AEC would assure me that I would get a milling contract, either in an existing mill or I could develop a mill of my own, that would mine out the ore I had discovered within a 10-year period, then I would be justified in doing it. But unless they do assure me of that, I cannot in all honesty sign something that I know I cannot live up to.

And I have told Mr. Chilson and Mr. Glen Emmons that and they agree with me.

Representative PATTERSON. The Indian contract is strictly contingent upon a customer?

Mr. BOKUM. I have to have one, sir, because in the contract it says if I find the ore I have to mine it and sell it because the Indian derives his income from the sale of the ore. They claim I have to mine it and sell it if I find it.

Representative PATTERSON. The only customer you would have at this time would be the Government?

Mr. BOKUM. That is right, sir, and they claim that they will not allow any additional milling capacity. Most of the mills in my area are owned and operated by people who have the ore reserves.

Representative PATTERSON. Would there be any market in the case of export?

Mr. BOKUM. I believe there is today, but we are not permitted. I asked Mr. Johnson for an export license on October 29. I called him here in Washington and I told him I would like an export license. He informed me that he would not give me one to start with and, secondly, there was not any market. But since that time there is a market.

Canada just sold $105 million worth of the concentrate to the British Government. France is getting into the uranium business; West Germany, Belgium, The Netherlands, Sweden, Switzerland, all the European countries are getting into the uranium power-producing business and apparently there is a market.

Chairman DURHAM. In planning this power program, they have to know definitely whether or not they are going to get fuel. So they are looking for a guaranty of fuel before they can go out and build a reactor.

I think you are right; there is a market there.

Representative PATTERSON. Of course, you cannot guarantee that either, because you do not know for a positive fact.

Mr. BOKUM. We could not on the Indian land.

Mr. Victor Salazar, who is following me as a witness, is president of the Quinta Corp. that has developed over a million tons of commercial-grade ore and has no market. He can explain his position.

I would like to bring out one other thing that I think is important.

The Atomic Energy Commission back 3 or 4 years ago figured commercial-grade ore at 1 foot in thickness and ten-hundredths in grade. That was commercial-grade ore. Now that is not economical, mineable ore in this country and never has been, to my knowledge. They have changed that now to 4 feet of fifteen-hundredths ore. And that is not economical, mineable ore under any circumstances in this country today.

Most companies, and I can say I think in all truthfulness, in the Ambrosia Lake area our cutoff is 5 feet of twenty-hundredths ore. We do not consider anything under that economical to mine, and do not consider it in our calculations of mineable ore.

I do not know what the 70-million-ton figure is based on, whether it is based on 4 feet of fifteen-hundredths, whether it is based on company estimates, whether it is based partly on 1 foot at ten-hundredths and partly on 4 feet at fifteen-hundredths, but I do not believe that we have 70 million tons of mineable ore in this country today proved out. And if we do not have it, we are playing with the security of this country in stopping exploration and development.

We only have 12 rigs drilling in our part of the country today when we used to have 40 and 50. The only reason that 12 are drilling today is because they made commitments to drill prior to October 28. If those commitments had not been made prior to October 28, there would be no drilling rigs in our area operating at all.

Our partners are Homestake Mining Co. and the Phillips Petroleum Co. I have talked to top management of both companies, and they are as confused as we are and they would cease exploration and development entirely if they had not made commitment to us prior to this development.

Chairman DURHAM. Are there any further questions?

Thank you very much, Mr. Bokum, for your statement.

The next witness is Mr. Victor Salazar, Quinta Corp., of Santa Fe.

Come around, Mr. Salazar.

STATEMENT OF VICTOR SALAZAR, PRESIDENT, QUINTA CORP., SANTA FE, N. MEX.

Mr. SALAZAR. My name is Victor Salazar. I am president of Quinta Corp., a New Mexico corporation, engaged principally in exploration and development of uranium ores.

I am thankful, gentlemen, for the opportunity to appear before your committee in behalf of the domestic uranium producers.

I am speaking, of course, only for the people who were engaged in this field prior to October 28, 1957, the people who have spent their time, their effort, and their capital, in reliance upon the commitments and promises made by the Atomic Energy Commission that there would be guaranteed price and a guaranteed market for uranium through the year 1966.

Circular 5, under which the Atomic Energy Commission committed itself to a guaranteed purchase program was in effect discarded and the "guaranty" that went with it, ended Monday, October 28, 1957, when Mr. Jesse Johnson, Director of Raw Materials of the Atomic Energy Commission, stated before the Atomic Industrial Forum:

*** * * We have arrived at the point where it no longer is in the interest of the Government to expand uranium concentrates—**

and that—

*** * * under these circumstances the Commission at this time is faced with limiting commitments for additional domestic uranium production * * ***

This change of policy caught us by surprise. We had no forewarning that the guaranteed purchase program would end 9 years before it was supposed to end.

The effects of Mr. Johnson's speech were disastrous. Exploration has virtually ceased with the exception of that which is absolutely necessary to meet requirements of a few contracts.

Many people holding leases have voluntarily surrendered them, no longer wanting to risk time and capital, having no assurance that there will be a market for ores that they may be fortunate enough to find.

The effect has even been felt by our State government. I quote the following news release by the Associated Press from Santa Fe, N. Mex.:

State Land Commissioner Murray Morgan, Wednesday (February 19, 1958) blamed a sharp decrease in revenue from the State's monthly sale of mineral leases on the Government's current uranium policies. Morgan said he is going to stop issuing the mineral leases until there is some clarification of uranium milling policies * * *

The domestic uranium producer has reason to feel that the Atomic Energy Commission has discriminated against him. Even while the AEC was signing a contract with the Canadian Crown owned Eldorado Mining & Refining, Ltd., for something over $1.6 billion of Canadian concentrates representing approximately 70 million mine tons of U–308, 0.10 percent grade, for delivery in the period up to March 1963. The domestic mine producer had no market for 0.10 percent grade ore.

To this date, I know of no New Mexico mine that has been able to sell 0.10 percent grade ore to a mill. In fact, in one of the mining operations that I had something to do with in the years 1955 and 1956, all of the mills refused to take any ores containing less than 0.20 percent U–308.

We feel that the discrimination has continued and is apparent in the clear language Mr. Johnson used when he ended the domestic "guaranteed" purchase program, when he stated:

*** * * The Commission, at this time, is faced with limiting commitments for additional domestic production. * * ***

You will note that he made it specific for domestic production.

Now, we come to foreign purchase commitments and the high prices that are being paid for the same.

Our information is that the Commission made contracts for Canadian concentrates in 1955 representing approximately 43,000 tons of mine ore per day at a price ranging from $1.50 to $3.50 more per pound that is being paid for domestic concentrates.

Mr. Jesse Johnson and Commissioner Libby have both satisfactorily explained that these foreign commitments were made at a time when our own domestic reserves were inadequate to meet our needs.

Commissioner Libby went further in defending the higher prices paid to Canada when he stated in a letter to the Honorable Dennis Chavez, United States Senator from New Mexico, dated January 2, 1958:

*** * * Domestic ores give an average recovery of about 5 pounds of U-308 per ton, in Canada the average is about 2 pounds per ton, and in South Africa about one-half pound per ton. In other words, for each ton of domestic ore mined and milled, Canada must mine an average of 2½ tons, and South Africa 10 tons to obtain the equivalent production. This is essentially the reason for the somewhat higher foreign prices in relation to current domestic prices. * * ***

In other words, the Commission is paying more per pound for foreign concentrates because foreign ore is producing less pounds of concentrates per ton. That is like saying that a buyer of cattle should pay more per pound for lean cows because they contain less pounds than fat cows.

Commissioner Libby further states in the same letter:

*** * * Most of our Canadian contracts will be completed by March 31, 1962, with only a small tonnage to be delivered between April of 1962 and April of 1963. The Commission has options to extend most of the Canadian contracts to the end of 1966, but no action has been taken with respect to the exercise of these options * * ***

We know that no action has been taken as yet with respect to the exercise of these options, but we also know that the Commission has at least 4 years left in which to exercise them.

What we would like to know is: What is the policy of the Commission to be in regard to these options now that it admits that we have ample domestic uranium reserves and can develop more with an aggressive exploration program?

The domestic producer pays a high standard of living wage. He returns a great portion of his profits to his Government in taxes. He is interested in maintaining a strong domestic uranium industry to meet his country's present and future needs for peacetime and military purposes, without depending on any foreign power, no matter how friendly the relationship.

A healthy domestic uranium industry can be maintained and the domestic uranium producer can survive only if our Government takes steps now to assure a guaranteed market through March 1962, and an early announcement that contracts for foreign concentrates will not be renewed as they expire after that date to the extent that the domestic producer can supply our Government's requirements.

If this can be done, then, gentlemen, you will again see an aggressive exploration program that will insure this country with adequate reserves of this magic fuel of today to meet the needs of tomorrow.

Thank you.

Chairman DURHAM. As to the matter of course of not renewing foreign contracts when they expire, would that do you much good unless you could do it immediately. It might be over a long period of time.

Mr. SALAZAR. It would be a long period of time to us that are waiting unless the Government in the meantime resumes its purchasing program, something on the basis that Senator Barrett, I believe, proposed this morning.

Chairman DURHAM. Looking to that to solve your problems, I would think that practically all your mills would be closed. You would be back in the same position that you were when you started to build up your own mills to take care of your own need. You would have to open them up.

The foreign contracts will expire 5 or 6 years from now. During that interval is when you will suffer. You say,

> If this can be done we will again see an aggressive exploration program which will insure this country adequate reserves of this magic fuel.

Mr. SALAZAR. Domestic reserves.

Chairman DURHAM. With the situation existing today, you have to have an immediate solution to this problem.

Mr. SALAZAR. That is correct, sir.

Chairman DURHAM. You cannot depend on the foreign contracts being not negotiated again?

Mr. SALAZAR. In the meantime, we need a resumption of buying by the Government on some basis.

I was very happy to see a proposal submitted here before you this morning with a chart showing that the needs of the Government were so many tons and that would not add any more to the needs; they would stockpile so many tons in the meantime until this contract period expired.

Chairman DURHAM. Are there any further questions?

Thank you very much.

Representative DEMPSEY. I want to ask you a question, Mr. Salazar. How much uranium have you blocked out for your company?

Mr. SALAZAR. On the basis of our own calculations and the curve which we use, which is lower, or I should say lower than used by the AEC, we consider nothing under 5 feet and under twenty hundredths to be ore. On that basis, we have better than 1 million tons blocked out.

Inside of this one property, we also have some Indian allotted leases that we signed in partnership for which our operators paid a bonus of over $100,000. We have paid this and we are committed to $10 per acre per year exploration, plus a dollar annual rental per acre. Now we have found ore in one of those Indian allotments already, but we have no market for it. We will have to continue to pay the dollar rental and $10 per acre per year for exploration.

Representative DEMPSEY. And you have no milling facilities?

Mr. SALAZAR. That is right. All of this was undertaken prior to Jesse Johnson's announcement on October 28, 1957. Up to that time we had several rigs running. We have cut down now to 3 rigs as of January: 1 blocking out ore, 1 doing exploration work, and 1 keeping lease commitments and validating public domain claims. That is the very minimum we can operate under in order to keep our lease. We have spent approximately $600,000 in exploration and land acquisition on these properties.

Representative DEMPSEY. Is most of your land Federal?

Mr. SALAZAR. No. Some of the land is Federal, some of the land is owned by the railroad, and some of the land is Indian allotments.

Chairman DURHAM. Are there any further questions?

Thank you very much, Mr. Salazar.

Mr. Kenneth Garard.

STATEMENT OF KENNETH GARARD, NAVAHO TRIBAL MINING ENGINEER, WINDOW ROCK, ARIZ.

Mr. GARARD. Mr. Chairman, committee members, my name is K. M. Garard, mining engineer for the Navaho Tribe, Window Rock, Ariz.

I am probably going to approach this from a little different angle than it has been. There seem to be on the reservation 2 distinct phases, 1 is the milling or processor and 1 is the producer. If the processor is not happy, the miner or producer is not happy. That is the existing condition that we have on the Navaho reservation at this time. That is due to the negotiated contracts of the Atomic Energy Commission with the processor, whereby to amortize his investment in 5 years he cannot, at least in one case, make such amortization under twenty-five hundredths heads on ore; in other words, that has completely destroyed the reserves of twenty hundredths and under which I give an estimate in my report and which I believe is very, very conservative, of 1½ to 2 million tons, on the Navaho.

It will no doubt run double that and possibly more, but I was not able to gather in this information to completely cover our reserves before my trip.

The other factor that enters this picture, which is hampering the uranium production is the fact that your independent processor has his own property, and yet on Navaho 70 percent of our ore is produced from small operators who depend upon the processor for their livelihood.

The processor, in other words, is receiving 5,000 tons per month from a producer we have in the Monument Valley area. He now notifies the producer that they will only accept 2,000 tons per month, and this operation cannot survive on 2,000 tons of ore per month. They have to take it out much more rapidly to make any money. Therefore, if we cannot get some relief, there is one of the better mines in the United States that will have to shut down on 2,000 tons where he can operate on 5,000 tons.

Chairman DURHAM. That is on Navaho lands?

Mr. GARARD. That is on the Navaho Reservation proper, not allotted lands..

Chairman DURHAM. That means there won't be any mining at all?

Mr. GARARD. It is going to cut it out if we cannot get some relief from either Government stockpiling or from .20 down to .10, as agreed to in circular 5.

Chairman DURHAM. When was circular 5 issued?

Mr. GARARD. That was the second issue in 1951. That was authorizing the Atomic Energy Commission to purchase. The price they do abide by, but the tonnage they can cut on the producer. In other words, you cannot blame the processor for wanting to work his own ores because there is more money in it for him. But the little pro-

ducer that has been encouraged up to this time is left holding the sack.

We have, of course, on Navaho an entirely different proposition than they have in their off-reservation areas. One of the gentlemen previously mentioned the fact that he had an investment off the reservation, but on allotted land. And the Bureau of Indian Affairs and the Navaho Tribe are faced with a critical decision to make concerning the allotted lands.

The Navaho Tribe does not want to stick these parties for their money and the Bureau tells me they do not want to stick the parties for the money, but it is the law. The Department of the Interior, through the Bureau of Indian Affairs, is going to have to demand the final settlement before too long.

Chairman DURHAM. How long has this existed?

Mr. GARARD. What is that?

Chairman DURHAM. How long has this existed?

Mr. GARARD. Well, I don't remember the date of those bids.

Mr. BOKUM. They were in the latter part of September.

Representative DEMPSEY. You are on the Navaho Reservation. Does the Atomic Energy Commission have a lot of employees over there?

Mr. GARARD. No, not at the present time, Congressman Dempsey.

Representative DEMPSEY. Did they not have back there in September and October? They knew about these leases?

Mr. GARARD. Yes.

Representative DEMPSEY. They did not make any exception of those?

Mr. GARARD. No, they did not notify us of anything like that.

Representative DEMPSEY. So the first payment was made before the ruling came out?

Mr. GARARD. In good faith.

Representative DEMPSEY. And the entire amount had not been paid, because they were supposed to pay the balance on November 5?

Mr. GARARD. Yes.

Representative DEMPSEY. And Mr. Johnson's speech was made on October 28?

Mr. GARARD. That is right.

Chairman DURHAM. Are there any further questions?

Are you through with your statement?

Mr. GARARD. Yes.

Chairman DURHAM. Thank you very much, Mr. Garard. That is something I think should be corrected.

The next witness is Mr. W. L. Davidson, president of Lone Star Mine & Development Corp., Albuquerque, N. Mex.

STATEMENT OF W. L. DAVIDSON, PRESIDENT, LONE STAR MINING & DEVELOPMENT CORP., ALBUQUERQUE, N. MEX.

Mr. DAVIDSON. I would like to disregard my statement and just make a few remarks and introduce Mr. Reinhardt, who is a geologist from Grand Junction, who is very familiar with what we are talking about today.

Our property is the La Bajada property located about 17 miles south of Santa Fe and about 48 miles out of Albuquerque. We

are a little different from most of the testimony here today in that we have an ore that is primary.

Now, there is a primary ore and a secondary ore. All the mills up until the present time, with the exception of the Texas zinc mill at Mexican Hat, have been built for secondary ores. We have no place to ship our ore at the present time unless we ship it to the Texas Co. mill, which would be 360 miles by truck. This is prohibitive.

We have come here today to ask for a mill and a stockpile that we might stockpile our ores prior to the milling and be paid for the uranium. We have a peculiar ore in that it is copper and uranium and the uranium has to be taken off first. If we had an ore where we could take the copper off first, we could easily set up flotation and ship the concentrates, but we are caught in a place, more or less, of a hardship case, where we cannot ship the ore to the Grants buying station; neither can we ship it anywhere else, and yet we have a wonderful property that has great potential.

We are a little different, too, from most of those who have testified today. We have put everything that we own into the uranium business. We have not reserved anything. I have even sold all my stocks that I have and loaned that money to the corporation.

Our board in Lone Star has loaned the corporation the money to keep them in business for over a year. We have come absolutely to the end and we needed relief as of yesterday, not today. To get relief for Lone Star, we would have to have a temporary shipping permit even though they say the ore is not amendable, we could ship it under circular 5, which gives us the right to ship from any discovery 1,000 tons of ore without a contract. This right has been denied us, not that they had any basis for law under it, only that they have said that they were waiving that because the ore was not amendable. But we have checked and found that the ore is amendable, but not to their process.

Therefore, we would ask for the right to ship our thousand tons that under the law we should be allowed to ship, and that is within any 1 year without a contract, and then we would like to have a contract for at least 40 to 50 tons a day.

Some of these people who have testified today say they could not survive on that kind of shipment. We would be very glad to have a four-or five-hundred-ton a month contract with the possibility of a stockpile and a mill.

Now, Southwestern Engineers in California at this time is working out a process to mill the La-Bajada ore. Mr. Reinhardt has been with them in Los Angeles in the last 2 weeks. Today he will be able to answer the questions that you might want to ask.

We have found out definitely that the La-Bajada ore is amenable to a process, whether it be amenable to the process at Grants which was not built for our property, but it is amenable and very much amenable, it will be a very fine ore to separate and will be an ore that will make a very good profit.

Now, the average ore in La-Bajada is about 0.22. U–308. This has been disputed by the AEC and that is another reason why I brought Mr. E. V. Reinhardt with me today. I was hoping Mr. Anderson would be here. He has written letters to a friend of mine and I read the letter wherein he said no doubt La-Bajada would have had great

possibility, but the ore not being amenable, they did not have any other recourse but he had been misinformed by people he had trusted to give him the truth.

So I brought Mr. E. V. Reinhardt here today so that he might, being a consulting geologist and the one that had written the reports on this property and made a study of the property, be able to answer your questions as to the amount of ore that he thinks can be produced and as to whether it would be feasible to build the mill on La-Bajada.

Chairman DURHAM. What have you been doing with your ore at the present time?

Mr. DAVIDSON. Nothing.

Chairman DURHAM. You just have the property?

Mr. DAVIDSON. We just have the property. We stacked up a thousand tons of ore, we could not do anything with it. We called it a monument and quit.

Representative DEMPSEY. Did you not make some deliveries?

Mr. DAVIDSON. We shipped 100 tons to the AEC which they used for sample purposes. They paid us for it, paid us the bonus on it. They gave us back a report that it was 96 percent recoverable by acid, but that it used too much acid.

Mr. Reinhardt will also be able to touch on that today.

Representative DEMPSEY. How much ore do you have in sight now?

Mr. DAVIDSON. About 800,000 tons.

Representative DEMPSEY. Have you explored the entire area there?

Mr. DAVIDSON. No, only 600 feet of the fissure. We figure the fissure will run 2,200 feet as there is a monazite outcrop that goes 2,200 feet alongside the fissure. Most engineers that have been on the property have conceded the fissure will go the extent of the outcrop.

Representative DEMPSEY. When you go 2,200 feet, what will you have?

Mr. DAVIDSON. Three to five million tons.

(The statement of Mr. Davidson and correspondence in the record follow:)

STATEMENT OF W. L. DAVIDSON, PRESIDENT OF LONE STAR MINING & DEVELOPMENT CORP.

My name is W. L. Davidson. My residence is at 647 Solar Drive NW., Albuquerque, N. Mex. I am the president of Lone Star Mining & Development Corp. which was incorporated under the laws of Delaware on August 10, 1954, and has its principal office at 235 Korber Building, Albuquerque, N. Mex. It has about 1,200 stockholders residing principally in the States of California, Utah, New Mexico, and Texas.

The company owns and operates the La Bajada mine in section 9, township 15 north, range 7 east, in Santa Fe County, N. Mex., at which it has developed an extraordinary deposit of ore containing principally uranium, copper, cobalt, nickel, germanium, and other rare earth minerals estimated by engineers as being in excess of 800,000 tons of "probable" ore and a possible potential of several times this amount.

This company is also mining and producing uranium and vanadium ore in its North Wash Mine in section 36, township 31 south, range 11 east, in Garfield County, Utah, and is exploring and developing other properties in the State of Utah.

The company has a contract from the Atomic Energy Commission to market its ores from the North Wash Mine in Utah but has been unable to secure a contract from the AEC to sell its ore from the La Bajada Mine in New Mexico. The AEC has deferred the issuance of a contract for the purchase of this ore on the ground that, due to its complex character, it is not amenable to the

extraction process and chemicals in use at the mills operating in this area. We have one of the largest uranium deposits on the Colorado Plateau, but, because of this ruling, are unable to ship it for the use of the United States Government, and are very seriously hampered in outlining the full extent of this great ore body.

The company applied to the AEC for a shipping contract in December 1956 and at the request of the AEC made 4 shipments of ore aggregating over 100 tons to the Lucius Pitkin buying station at Grants, N. Mex., for test purposes. Samples from three of the deliveries were sent to the National Lead Co. for metallurgical and pilot mill tests. The National Lead report contained the following conclusion: "Preliminary tests were made on these ores to determine their amenability to acid leaching and acid consumption. Samples 374–3 and 374–4 are readily amenable to acid leaching with over 90 percent of the U_3O_8 being extracted in 6 hours with 500 pounds of H_2SO_4 and 40 pounds of MnO_2 per ton of ore." In spite of this report and others to similar effect the AEC held and still holds that the La Bajada ore is unamenable and cannot be bought. The complete reports of the National Lead Co. have not been made available to us by the AEC. An excerpt from the report of National Lead Co. was reluctantly furnished us after we strenuously objected to having our ore classed as unamenable and after we demanded to see what the National Lead Co. report said concerning it.

This company has spent over $250,000 in good faith in the development of the La Bajada mine with the full knowledge and approval of the AEC and in reliance upon the provisions of the law and of "circular 5" and is now in position to produce and ship or stockpile ore of commercial grade and in sufficient quantity to be entitled to a mill on its property.

It is the conclusion of engineers that, to make the La Bajada property a profitable mine, a mill on the property, designed to recover the copper, uranium and the rare metal elements, is a necessity as it is unlikely that a market will be found without concentrating the ore and separating the various valuable constituents from each other. If copper ore of shipping grade were produced the El Paso smelter of the American Smelting & Refining Co. woud not pay for the uranium. The United States Atomic Energy Commission, if it could be induced to buy the uranium, would not pay for the copper. Thus in either event, valuable minerals, in the aggregate worth millions of dollars would be lost. In brief, to make this a successful operation a plant must be provided which will make separate concentrates of copper for consignment to El Paso; uranium for consignment to the AEC and nickel, cobalt, each separated from the other, for sale to any available market.

The officers of the Lone Star Co. have pursued negotiations with the Grand Junction office of the AEC for a contract for the erection of a mill on the La Bajada property since January 1957 with only negative results. The company is applying for a mill contract on the same amortization basis as was granted to Anaconda, Phillips, Metals Reduction, Union Carbide, Homestake, Kermac, and others, and also provision for a stockpile on the property to accumulate ore pending the completion of a mill.

The officers and directors of Lone Star Mining & Development Corp. charge that the attitude of the AEC toward the operation of the La Bajada mine has been uncooperative, restrictive, unjust, and discriminatory; has resulted in severe damage to the project and, if pursued, will practically amount to confiscation of the property.

PERTINENT FACTS CONCERNING LA BAJADA MINE

Date and cost of acquisition of Federal lease: BLM–A 031748, July 1, 1955—cost $50,000; BLM–A 036592, May 15, 1957—cost $5,937.50.

Date and cost of acquisition of Noelke-Poage lease: May 21, 1956—total cost and rentals, $28,606.71.

Date and cost of acquisition of Trigg lease: February 1, 1957—total cost and rentals, $3,770.25.

Date of Jesse Johnson's speech hinting that the requirement for uranium might soon be filled: February 9, 1957.

Date of Jesse Johnson's speech stating that no more contracts for mills would be made: October 28, 1957.

Date of release by Senator Anderson that there would be a review of the situation in respect to operators who were being injured: January 20, 1958.

History of property

1. Reported to have been worked by the Spanish.
2. A shaft sunk to a depth of 250 feet in the vein by American Smelting & Refining about 1923.
3. Small production of copper ore by small operators, 1904–22.
4. Lone Star started cleaning and retimbering shaft immediately after purchase of Federal lease. It is now cleaned to a depth of 228 feet. On the 170-feet level about 150 feet of lateral work exposes the vein 40 feet wide. A raise to the 142-foot level and lateral work from the top of the raise again exposes the vein 40 feet wide.
5. Lone Star also cleaned out and retimbered an old shaft 30 feet deep, located 200 feet southeast of the deep shaft and exposed the vein. The full width of the vein was not determined as the drift caved.
6. Lone Star drilled the vein in the bottom of the canyon in the early spring of 1957 and found ore in 4 out of 6 holes.
7. Lone Star cleaned out an old incline sunk by one of the small operators of the period 1904–22, which was located in the east wall of the vein and failed to find ore. This was costly work which outlined more fully the position of the vein.
8. In all, Lone Star has spent over $225,000 on the exploration of the property About $200,000 was spent prior to Mr. Johnson's speech of October 28, 1957.

Usefulness of the work done to the present

The work performed to the present has been highly useful in demonstrating the presence of the ore. It is exactly the same type of preliminary work that would have been done by any engineer who had to establish the direction, size, and attitude of the vein. These factors have now been established and new openings will have to be made. These will consist of a tunnel from a point a few feet above the creek level and a new shaft in the footwall of the vein.

Tonnage of ore

Ore is not considered blocked out until it is exposed on four sides. There is no blocked-out ore in the mine. Probable ore need be exposed only on two sides or be proved by drill holes. The vein has now been proved over a length of 600 feet and it is believed that ore grade material will continue to 300 feet of depth. For sandstone uranium ores, a factor of 14 cubic feet per ton is used. This material is much heavier than sandstone and tests indicate that 11 cubic feet will equal 1 ton. Therefore, the following indicated tonnage may be calculated:

$$\frac{600\ (\text{length}) \times 40\ (\text{width}) \times 300\ (\text{height})}{11} = \frac{7{,}200{,}000}{11} = 654{,}000\ \text{tons.}$$

The possible tonnage is estimated to be 3 times this figure as the geologic setting presents a probability that the ore body is 2,200 feet long.

Grade of ore

The La Bajada vein is obviously of ore grade. Just below the oxidized zone, at depths of 10 to 40 feet, the grade of ore is from 1.0 to 1.45 percent uranium oxide and about 6 percent copper; on the 142-foot level, the average grade is about 0.22 percent uranium oxide and 3 percent copper; on the 170-foot level, the grade is 0.17 percent uranium oxide and 2.83 percent copper. It would seem that the average of the 142-foot level should probably be about the average for the mine: 0.22 percent U_3O_8 and 3 percent copper.

Indicated pounds of uranium oxide and copper

Uranium-oxide: 4.14 pounds per ton×654,000 tons=2,877,600 pounds.
Copper: 60 pounds per ton×654,000 tons=39,240,000 pounds.

Markets

If the ore is not amenable for the recovery of uranium at any existing plants it will not be purchased. If it is acceptable and were sent to them, about $10 million worth of copper would be wasted.

If the copper were concentrated and shipped to the smelter of American Smelting & Refining at El Paso, the uranium, also valued at about $10 million, would be wasted.

Obviously, to make this a mine, a mill on the property, designed to recover both copper and uranium, is a necessity. Tests are now being made by Southwestern Engineering to make a flow sheet for such a plant.

Offers by other mining companies

Three companies have offered to take over the property. Their offers were far from generous and were rejected. There should now be no criticism of Lone Star for not surrendering a property on which they had spent $250,000 for a pittance.

SUMMARY

The property was purchased, most of the work was accomplished, and a request for a mill was made before Mr. Johnson's declaration of a new policy on October 28, 1957.

The work was done in good faith at the request of the Government of the United States that an intensive search for uranium be made. It could, in fact, be interpreted as an unwritten contract with the Government.

If the ground had been acquired and the ore discovered after October 28, Lone Star could have no complaint. As both were accomplished before October 28, Lone Star is of the opinion that a contract for the purchase of uranium concentrates with the bonus provisions for the amortization of a mill should be granted by the Atomic Energy Commission.

Lone Star Mining & Development Corp., December 31, 1957

SANTA FE CANYON PROPERTIES

Capitalized costs:	
Original costs	$55,937.50
Rental fees and royalties	28,888.96
Operating costs	128,339.50
Total capitalized costs	213,165.96
Executive and administrative expense allocated to property	39,288.41
Total expenditures, Santa Fe canyon properties	252,454.37
Total cash expenditures of corporation as of December 31, 1957	551,430.01

LONE STAR MINING & DEVELOPMENT CORP.,
Albuquerque, N. Mex., February 12, 1958.

Representative J. J. DEMPSEY,
House of Representatives, Washington, D. C.

DEAR MR. DEMPSEY: Enclosed you will find a letter written to Mr. Jones on January 24, 1958, also a letter written to Mr. Jones on February 12, 1958, also a letter to Mr. Jessie Johnson on February 12, 1958.

You already have a copy of letter written to Mr. Jones on January 8, 1958, that was sent to you along with a letter from Mr. Reinhardt on January 21, 1958. Also, I am enclosing another letter from Mr. Reinhardt in which I would call your attention to the fourth line of paragraph 7, a statement by Mr. W. S. Hutchinson, Jr., who is the assistant manager under Mr. Jones of the AEC at Grand Junction, "He had several chances to turn the property to a major company and refused them." This statement by Mr. Hutchinson bears out the attitude of the Grand Junction office very plainly.

We know that in your position you are bound to be worried by an element of people that always feel they are being mistreated. For that reason I was very reluctant to appeal to Washington with our troubles but we had no other alternative.

I believe that I have furnished more than enough evidence by letter and by statement to prove to the committee that the La Bajada property has definitely been discriminated against by the leaders in the AEC.

In the letter to Jessie C. Johnson, which is enclosed, you note in the second paragraph and the fifth line, "Therefore we feel that Mr. Strauss and yourself should weigh the facts that exist between the Lone Star Corp. and the AEC and that you should correct the injustices that have been levied against the Lone Star Corp."

In the last paragraph of the enclosed letter to Jessie C. Johnson, "After all there must be an element of competition or else the industry will become a monopoly. If you suppress the small mining and milling operator at this stage

our Government will definitely reap the whirlwind when they are forced to do business with the monopoly 25 years hence."

We in Lone Star appreciate your interest in trying to help us with the matters concerning the La Bajada property.

Sincerely yours,

W. L. DAVIDSON.

ELMER V. REINHARDT, GEOLOGIST,
Grand Junnction, Colo., February 1, 1958.

Mr. W. L. DAVIDSON,
President, Lone Star Mining & Development Corp.,
Albuquerque, N. Mex.

DEAR MR. DAVIDSON: I have delayed answering your letter of January 24, hoping to obtain definite information from the Atomic Energy Commission.

Today, the following was given me by W. S. Hutchinson, Jr., Assistant to the Manager:

1. They have been ordered to review the needs of the Government for uranium and the known potential for the production of uranium for the next 10 years. The review will not be completed for 60 to 90 days, at which time a public announcement will be made.

2. It is now believed that if there is any loosening of the present tight policy, it will be for the Gas Hills, Front Range, and Texas areas which had a proven reserve prior to February, 1956.

3. I told him that you had little proven reserve but that you had a large indicated reserve and that you had spent your money in good faith prior to February, 1956. He said that would all be taken into consideration in the review.

4. He has not replied to your letter because he is waiting for authorization from Jesse Johnson to send you a copy of his statement which, he says, was quoted out of context by the Albuquerque paper.

In general, I would say that all I got was evasion. These boys are timid and afraid to incur the wrath of the Washington fathers by defending right when wrong is the safer route. They must realize you have a legitimate case but they are hedging behind such statements as "He had several chances to turn the property to a major company and refused them." That, of course, should be any property owner's privilege and should incur no later penalty from an agency of the Government.

I have not yet heard from either Homestake nor Hermac about the oxidized ore, but expect some manner of report any day.

Nor have I heard from Cliff, so do not know whether the operation is underway in the Henry Mountains. I will go over there as soon as I know there is something to see.

I have written to Sam Silverstein, who usually heads the entertainment committee of the Colorado Mining Association, asking him to get a room for you and Mrs. Davidson at the Shirley Savoy starting the night of February 5. The reservation is not confirmed. Sam lives at the Shirley and you can call for him there when you arrive.

I plan to leave for Los Angeles immediately after the convention.

I have instructed my secretary to bill you tomorrow for $600 plus expenses for the month of January as per our agreement. February, I shall probably spend most of the month on your work, especially if Kermac declares the oxidized ore to be amenable to their plant.

Sincerely,

MIKE.

FEBRUARY 12, 1958.

Mr. JESSE C. JOHNSON,
Director, Division of Raw Materials, Atomic Energy Commission,
Washington, D. C.

DEAR MR. JOHNSON: Inclosed you will find a letter written to Mr. Allen E. Jones dated January 8, 1958, also a copy of letter of Mr. Allen E. Jones dated January 24, 1958, also a copy of letter dated February 12, 1958, also a copy of a letter from Mr. E. V. Reinhardt to me dated February 1, 1958, wherein I would call your attention to a statement made in paragraph 7 of page 1 and the fourth line, "He had several chances to turn the property to a major company and refused them." Also inclosed you will find a letter to me from Mr. Rein-

hardt of December 7, 1957. I would like to call your attention to the third paragraph of page 1.

No doubt the statements that Mr. Reinhardt has made in his letter to me of December 7, 1957, are true and we in Lone Star fully realize that your first obligations are to the Government, but we also feel that when an injustice is known to exist that those with the authority are responsible when said injustice continues to exist. Therefore, we feel that Mr. Strauss and yourself should weight the facts that exist between the Lone Star Corp. and the AEC and that you should correct the injustices that have been levied against the Lone Star Corp.

So that you will fully understand that we are not a promotion, I would like for you to have the following facts. The Lone Star Corp. in prospecting, developing, and purchasing properties has spent $551,430.01, of which $252,454.37 has been spent on the La Bajada property alone. We own properties in several locations in New Mexico as well as Utah. Our only business is mining and we feel that instead of the AEC trying to stop the progress of the Lone Star Corp. that they should be putting forth an effort to stimulate the progress of this corporation. After all, there must be an element of competition or else the industry will become a monopoly. If you suppress the small mining and milling operator at this stage our Government will definitely reap the whirlwind when they are forced to do business only with the monopoly 25 years hence.

Sincerely hoping that you will consider the small producer, I remain

Very truly yours,

W. L. DAVIDSON.

FEBRUARY 12, 1958.

MR. ALLEN E. JONES,
Manager, Grand Junction Operations Office, Atomic Energy Commission,
Grand Junction, Colo.

DEAR MR. JONES: On January 24, 1958, I wrote you a letter concerning the change of policy announced by Mr. Johnson. To date I have not received an answer to this letter. On January 8, 1958, I wrote to you referring to a letter of February 11, 1957, and also notifying your office that we had begun negotiations with Southwestern Engineering Corp. on the amenability and the milling of La Bajada ores.

On talking to Mr. Wolfe recently he informed me that you now have a report from him on the La Bajada property. I would like to have a copy of this report. Also you will remember while visiting with you on January 9, 1958, at Grand Junction we discussed the possibility of my having any new reports on the La Bajada ore made by National Lead. In this discussion we brought up a statement made by National Lead which is paragraph 1 of page 4 of National Lead report on sample 374–8, wherein they state, "Previous samples of La Bajada ore proved to be refractory to alkaline leaching, but in view of improved extraction rates obtained by more intense aeration, a reexamination of the earlier samples will be undertaken." No doubt they have made this reexamination and the Lone Star Co. should have a full report of it.

I have been invited to testify before the Joint Committee at Washington and it will be necessary to have an answer from you pertaining to the matters brought to your attention in this letter that I might be able to complete my testimony.

Sincerely yours,

W. L. DAVIDSON.

LONE STAR MINING & DEVELOPMENT CORP.,
Albuquerque, N. Mex., January 24, 1958.

MR. ALLEN JONES,
Atomic Energy Commission,
Grand Junction Operations Office,
Grand Junction, Colo.

DEAR MR. JONES: On January 21, 1958, through the Washington AP service, there was a release by Senator Clinton P. Anderson, chairman of the Atomic Energy Committee.

I am wondering in the light of this change in policy if it will be possible for your Grand Junction Office to reconsider the problems of the Lone Star Mining & Development Corp. in regard to their La Bajada property. It seems if Mr. Johnson is sincere in the statement that he has made before the Atomic Com-

mittee then La Bajada should surely be considered for a shipping permit and also a milling contract.

I would like to have an answer from you in regard to this change in policy that has been announced and released by Senator Clinton P. Anderson as of January 21, 1958. Also I would like to know just what effect, if any, it will have toward changing the attitude of the AEC Grand Junction Office with regard to the small producer.

Thanking you for an immediate reply, I remain,

Sincerely yours,

W. L. DAVIDSON.

Chairman DURHAM. Mr. Reinhardt is our next witness. Will you proceed please, Mr. Reinhardt.

STATEMENT OF E. V. REINHARDT, CONSULTING ENGINEER, GRAND JUNCTION, COLO.

Mr. REINHARDT. I came here at the request of Mr. Davidson to answer questions that might be made to me. So I do not have a prepared statement with me.

Chairman DURHAM. Will you give us your background? How long have you been a geologist? How long have you been working in the field?

Mr. REINHARDT. I have been mining for about 35 years. I have been engaged in the uranium business since 1948. It will be 10 years next September that I started in the uranium business.

Representative DEMPSEY. Where did you operate in the uranium business?

Mr. REINHARDT. I started with the United States Geological Survey. I worked with them for 2½ years. Then I went with the Atomic Energy Commission and was chief geologist of their Exploration Branch in Grand Junction for quite a period of time. Then I went with the Hunt Oil Co. as their chief geologist of the uranium division, and for the past 4 years I have been an independent consultant in Grand Junction.

Now I would like to explain to you a little bit how we arrived at this 800,000 tons of ore.

A shaft was sunk about 1921 or 1922 by American Smelting & Refining on this vein in an effort to expose copper ore. The shaft was completely caved in and Mr. Davidson cleaned it out to a depth of something over 200 feet. On the 170-foot level, he crosscut the vein and found that it was 40 feet wide. It has been crosscut since that time in one other place and it has proved to be about 40 feet wide at that location also.

Now by drill holes and by these mine openings we know that the ore extends at the present time over a length of 600 feet. I do not believe that the ore will go to a much greater depth than 300 feet because I am convinced that the ore has been enriched by surface waters that have taken some of the valuable constituents in the solution and carried them down in the vein and redeposited them, and I do not believe when we get down to the primary ore below the secondary enrichment that it is going to be rich enough to mine.

Therefore, I do not like to carry it to a greater depth than 300 feet, but if you multiply 40, the width, times 600, the length, times 300 feet, the height of the vein, and then divide by 11, which is the

factor that I used to convert cubic feet to tons, you will find that it comes out to about 654,000 tons.

Now the additional 150,000 tons that we are using comes in by the slope of the hillside. The shaft is near the bottom and the hillside rises above the shaft. In this wedge-shaped piece there would be another 150,000 tons.

Mr. TOLL. From the mill processing point of view, what is so unique about these ores?

Mr. REINHARDT. How large a tonnage?

Mr. TOLL. No. What is the makeup of these ores that makes them not amenable to the mills that you have contacted, in their opinion?

Mr. REINHARDT. The principal thing is the copper content. They declare that it will require up to 500 pounds of acid per ton of ore.

We brought that matter up with Southwestern Engineering in Los Angeles, and they say that they can see no reason whatever why 500 pounds should be required because it has very little calcium carbonate in it. It only runs about one and a fraction percent. There are a large number of sulfides, and sulfides do not consume acid.

Mr. TOLL. Have you contacted the pilot plant operated by the National Lead Co. for the AEC at Grand Junction?

Mr. REINHARDT. They are the ones who said it required 500 pounds of acid.

Now some other tests were made by Eagle-Picher in Joplin, Mo., and their report, which was furnished to us just a short time ago, said that only 50 pounds of acid were required. Southwestern Engineering in Los Angeles has not yet gotten into it far enough to give us a definite figure, but we expect that figure now within the next 2 or 3 weeks.

Chairman DURHAM. Would you build a processing plant if you got permission?

Mr. REINHARDT. What we need is an assurance that we can build a plant after the mine is fully developed. These 800,000 tons of ore are not blocked out.

The best you could do would be to call it probable ore. Now we have to fully develop the mine before we even take into consideration building a mill.

On the other hand, it is going to cost several hundred thousand dollars to fully develop the mine, and we need some assurance that we will be allowed to build a mill before we ever undertake this development work.

Mr. DAVIDSON. We have already spent on La Bajada $251,000 or $252,000, which proves good faith on our part because we do not have the kind of money to just be spending that unless we really were trying to do something.

Mr. Reinhardt figures in blocking out, what he means by that is to sink a shaft three to four hundred feet, a new shaft. We have two shafts but they were just for exploration and then set up to mine it.

What size shaft would you figure there?

Mr. REINHARDT. The very smallest that could be considered would be 4 by 8 in the clear, inside measurements. It would be much better to make a three-compartment shaft, which would be about 4 by 13½ or 14.

Mr. DAVIDSON. If we had a commitment from the AEC to buy our yellow cake, disregarding their amortization, if they do not want to give us the right to amortize a mill like they have to some of the larger companies, we would still be very much in favor of just a commitment from them stating that they would take the yellow cake up to the law, which is 1 million pounds per year from one operation. That is the way the law is written.

We could, in Lone Star, with that commitment, go ahead and finish our development work and build our mill. But up until now we have not been able to get this commitment that they would take from us even what they have agreed to take, which would be 1 million pounds at $8 per pound.

Mr. TOLL. One million or one thousand?

Mr. DAVIDSON. One million pounds. At least Mr. Jones said that to me on the phone just recently, 1 million pounds at $8 in 1 year from 1 property or 1 mill; 1 million pounds of U–308.

Chairman DURHAM. Are there any further questions?

Mr. SMITH. Mr. Davidson, is it tentatively your position that the Lone Star Mine Corp., would lose $20 million by virtue of the announcement made last October?

Mr. DAVIDSON. Yes, if we are not allowed to put in the mill, we have at least that much in copper and 10 million in uranium.

Mr. REINHARDT. That is not in profits. That would be gross value of the uranium and copper that we are quite sure exists there.

Chairman DURHAM. Thank you very much.

The next witness is Mr. Andre Senutovitch.

STATEMENT OF ANDRE SENUTOVITCH, RESERVE OIL & MINERALS CORP., SANTA FE, N. MEX.

Mr. SENUTOVITCH. I am here as a representative of my company, Reserve Oil & Minerals Corp., hereinafter called Reserve Corp. This company is a privately financed one, and the members of our board of directors have been amongst the pioneers in the uranium business in New Mexico.

Amongst properties which were once owned individually or corporately by members of our group are some today that, for instance, once held all of the uranium ore producing properties of United Western Minerals in New Mexico, most of the properties of Kerr-McGree Oil Industries, most of the properties of Phillips Petroleum Corp., and all the properties of Rare Metals Corp. All this applies, of course, only to uranium properties in the State of New Mexico.

To give you some more background, one of our directors, Mr. Louis Lothmann, was the initial discoverer of the Ambrosia Lake field.

Another member of our group, Mr. Frank Tetreault, was the initial staker of such sections as sections 22 and 26, T. 14 N., R. 10 W. New Mexico principal meridian, and sections 28, 30, and 34 T. 14 N., R. 9 W., New Mexico principal meridian, and sections 29 and 30, T. 13 N., R. 9 W. These lands, in conjunction with some others, today comprise well over half of New Mexico's known uranium reserves.

While the blocking of these reserves proper has been mainly done by large companies which are properly financed for blocking, mining, and milling, the small group in our company has many other firsts we are proud of, such as first discovery in Ambrosia Lake at the 1,000-

foot level in section 26, T. 14 N., R. 9 W.; the first discovery at the 1,500-foot level in section 6, T. 13 N., R. 8 W., and, in conjunction with Quinta Corp., who deserves most of the credit on this hole, the first 2,000-foot discovery in section 15, T. 13 N., R. 8 W.

The group represented in Reserve Corp. has solely relied upon private financing, never asked a DMEA loan, and has never encouraged any brokers.

In view of the secrecy that shrouds most of the facts and figures surrounding the uranium industry, we are forced in presenting our view to take this personal approach in presenting our problem to your distinguished committee. We believe, however, that you will find our problem rather similar to some of the problems confronting your committee.

In spite of the fact that our group did most of the successful pioneering in New Mexico, we were able to build up our equities financially, but very slowly, forced as we were from lack of financing to quitclaim or farm out to large, well-financed companies practically all of our original discoveries, and it was at the very time when Reserve Corp. was getting into a position to further grow into operators and prospective millowners that this opportunity was denied us by the Atomic Energy Commission's confusing statements.

As a group of people who have had much to do with the size of today's known uranium reserves in the United States, we boldly state that it is our opinion that only part of the Ambrosia field has yet been delineated and that considerable quantities of ore may yet be found in this field at much greater depths, from 2,000 to 5,000 feet. The exploration for ore at these depths, to be economically sound, should be done over a period of years, since it is only reasonable to follow the ore trends step by step in their weaving patterns so as to avoid too many dry holes.

At the time of the reading of this report, we have probably completed a 3,000-foot hole which will cost Reserve Corp., $10,000. This is to give you an idea of costs involved in increasing the extent of the Ambrosia field at depth.

For a while it seemed that Mr. Jesse Johnson's statements so advantaged the large companies that the small companies would all be ruined, yet, in all fairness, I am bound to state that the actions taken by the larger companies have been fair to the smaller companies, as far as we are concerned. For instance, a few months ago, Reserve Corp. faced a development and mining obligation to Phillips Petroleum Co., of approximately $400,000, at a time when the public's confidence in the uranium market was just about nil and our cash reserves were, likewise, nearly nil.

Phillips Petroleum was well aware of the economics of the moment, but did not only deal reasonably on the very valuable property in question, but even could be said to have dealt generously in agreeing to advance us money to pay our proportionate costs on fair terms. They indicated that the large companies recognized the worth of prospecting and development groups such as ours, and intended to support them where economically feasible.

Mr. Chairman and distinguished members of the committee, our company faces a similar policy decision on exploration and development as you do, except that we will make the decision, being responsi-

ble to our stockholders only, while you are responsible to the people of the Nation.

The board of directors of our corporation does not have all the facts and figures you have. We believe that, in all fairness to the uranium industry, the chaotic Jesse Johnson statement rule should be brought to a clear conclusion with no further unnecessary delay.

All the principal energy fuels, such as coal, oil, gas, and basic minerals, such as iron, copper, and many others, were all developed under the free-enterprise system and all consider themselves in grave danger when known reserves of any 1 of these minerals are less than 50 years of projected demand.

Of course, these freely developed minerals industries are able to project known demands, since they have all the facts to work with. This, of course, does not apply to the uranium industry, and is the reason why such casuistical statements by Mr. Jesse Johnson have such disturbing effects.

We would, of course, prefer to be a free, unregulated industry, taking our chances on management and know-how, but, in view of the international tensions, we will not argue that point. Insofar as the uranium national reserves are concerned, we are allowed to peek under the veil of secrecy and come up with a "guesstimate" that such reserves are barely sufficient for 10 years of demand and strategic stockpiling, in theory.

For all practical purposes, it as a well-known fact in our industry that some mills are going to run out of ore well before 1966 and that, therefore, the Atomic Energy Commission's projected yellow-cake production statistics are bureaucratically fanciful and optomistic.

To point out some of the confusions that the industry is handicapped by in New Mexico, for instance, some companies are estimating their reserves on the basis of 350 counts for 0.20 commercial ore while others are estimating on 650 counts for the same quality of ore.

Since subsurface development and mining has just barely begun, we still do not know whether the ore reserves of the State of New Mexico are optimistic or conservative. The Atomic Energy Commission seems to have accepted computations of ore reserves on either the 350 or 650 count theory, and have computed milling capacity on ore reserves derived by both methods.

If the 350 count theory is incorrect, and does not represent 0.20 ore then the Atomic Energy Commission would have given the Ambrosia Field more milling capacity than there is present ability to produce ore which would necessitate further exploration for more ore in that area.

It is felt by our group, and many others in the industry that the Atomic Energy Commission has grossly overestimated known ore reserves and is using a basis of computation that no reasonable businessman could attempt to justify.

Chairman DURHAM. What do you mean by 350 count?

Mr. SENUTOVITCH. In New Mexico, we have to take radiometric count since the ore is far beneath the surface. That is 350 counts per second radiometric. And they come with different curves. It looks like the AEC accepts the curves as the company wishes them to be represented.

Mr. Chairman, we would like to discuss five hypothetical problems:

(1) Too much ore for all our foreseeable future needs: This presupposes that uranium will no longer be needed in 1966. If this is correct,

tell it to us now so that we can save our stockholders unnecessary expansion costs in a doomed industry.

(2) Enough ore for the next 10 years with no reserves at the end of this time: This would be actually a Government granted monopoly to the companies who have been fortunate enough to obtain mill permits, since they would be the only ones through market control, who could afford to extend reserves for their own mills.

(3) In connection with (1) and (2) above, too much milling capacity for our present needs: In such an event, inefficient mills should be scrapped and a pro ration system considered so that the burden of such limited capacity be borne equally by the large and the small companies.

(4) In connection with (2) above, too little milling capacity for our present needs: The Government may consider some way to help the small companies finance independently owned mills either singly or through group ownership.

(5) We do not have enough milling capacity or ore reserves for our present and projected needs: In conjunction with the mill solution in (4), we might consider that the Government help develop underground reserves by paying the developer, for his discovery of ore in the ground, $1 a pound uranium content on drill spacing sufficient to reasonably indicate tonnage estimates. This could be considered in lieu of present haulage and production bonuses which would expire prior to the time when the additional reserves could be expected to be mined.

Our Government, in the national interest, would cheaply have on tap large reserves after a period of years which may be the difference in our remaining a world power or not, in the event of one or many technological breakthroughs which may occur at any time, and make us need much more uranium than we have guessed at, especially in this age where we are beginning to dabble with space.

Reserves may be maintained as economically in the ground as gold may be held in the vaults at Fort Knox.

To summarize: We believe that the safety and welfare of our country demands and requires the discovery of additional uranium reserves and the mining and milling of large amounts of additional ore.

The very existence of our Nation is dependent upon accomplishing this objective.

Conclusion: We fully appreciate that we are submitting our thoughts in a vacuum of no information. We, therefore, appreciate that none of our suggested conclusions will be exactly as you find conclusions to be justified when you obtain and have all the facts.

Our not having all the facts, it is also possible that our suggestions will be of no benefit to you.

The problem confronting your committee is the same problem which confronts our company, and our company is in a comparable position to all companies engaged in uranium development. If you answer the questions confronting our directors for us, you are answering a basic question confronting the industry.

Reserve Corporation will probably today complete a 3,000-foot exploratory hole. Regardless of what is found, should my company discontinue all further exploratory drilling? If the answer is yes, we want the answer now in fairness to our investors and all other investors similarly situated.

If the answer is to discontinue, we believe that our investors will still receive a fair profit. A few companies are even more fortunate. Unfortunately, most of the uranium investors would take a loss, and even these would be better off to know that they have a loss now and still have time to recoup it in another business.

If the answer is to discontinue and we are not told so frankly and openly, losses will be taken by additional investments and explorations which are not justified and can serve no useful purpose.

If the answer is that we should continue, we will do so to the extent we are able under any incentive program that the Atomic Energy Commission will offer. We cannot do so even if the national interest requires we do so unless we are given a market or a payment for discovered ore reserves in the ground.

The initial discovery of Ambrosia Lake was made by Mr. Louis Lothmann, with subsequent vital discoveries by Mr. Carl Anderson, Mr. Richard Bokum, and United Western Minerals Co.

The State of New Mexico, previously to Ambrosia Lake, was opened up by an Indian, Mr. Paddy Martinez, who discovered ore at Haystack Mountain near Grants.

Likewise, in all fairness, these New Mexico reserves would not have been fully developed, if large companies would not have entered into the picture. None of the discoveries that are now the New Mexico ore reserves would have been made if the Government had not at the time given a proper incentive to small private groups and individuals to risk their time and money.

I hope that our remarks have been of assistance to your committee.

I hope and believe that the actions of this distinguished committee upon obtaining all the facts will be of assistance to the uranium industry and will insure the continuance of this country as a world power, sufficient to protect our way of life.

If you need additional yellow cake, you must give additional contracts for mills. If you need additional reserves, you should pay for the development of additional reserves.

Thank you, Mr. Chairman.

Chairman DURHAM. That is an excellent statement, Mr. Senutovitch, very clear and contains a lot of information.

Do you have any questions?

Thank you very much.

Mr. SENUTOVITCH. Thank you.

Chairman DURHAM. The last witness is Mr. Gordon McMeen, president of the Lutah Uranium & Oil, Inc., Roswell, N. Mex.

STATEMENT OF GORDON E. McMEEN, ROSWELL, N. MEX., PRESIDENT, LUTAH URANIUM & OIL, INC.

Mr. MCMEEN. Distinguished members of the Joint Committee on Atomic Energy, ladies and gentlemen, my name is Gordon E. McMeen, from Roswell, N. Mex., and I appear before you today as president of the uranium producing firm of Lutah Uranium & Oil, Inc., which has primary operation and development interests in the great State of South Dakota.

I come to you voluntarily and at my own expense, as a patriotic American citizen, as the chief executive officer of a firm with responsibilities to a family of stockholders, and as one who feels that the pro-

curement policies of the Atomic Energy Commission need reevaluation and clarification as we shift our technical and economic capacities from the atomic age to the new age of outer space.

Representing as I do the third generation of a banking family, my principles lean toward conservatism and I am interested in the American investor who has made our free-enterprise system possible, workable, and profitable.

In preparing for this visit with you today, I felt some misgivings in reading a prepared statement as I am doing now, for there are many things that occur to me that could be best expressed spontaneously, as we from New Mexico are accustomed to expressing ourselves.

So if my language and phraseology seem a little awkward in the moments ahead, I hope you will understand that reading from a prepared text is not one of my accomplishments.

As most of you on the Joint Committee know, particularly those of you who have been sent to the Halls of Congress by the people of uranium-producing States, our infant industry was plunged into an awkward state of uncertainty and confusion by last October's announcement by the Raw Materials Division of the Atomic Energy Commission that there would be a "freeze" on the granting of permits for new uranium ore-processing mills. The effect of this announcement was serious and severe. The dimensions of this effect have yet to come into focus at the Washington level, the subject being eclipsed by more newsworthy happenings in the fields of science, space satellites, ballistic missiles, and budgets.

There was a devastating effect on the already precarious values of uranium securities. There was a wide reflection of this in the money markets of New York, Chicago, and San Francisco, as well as in the smaller but equally important trading centers of Denver and Salt Lake City. Almost overnight "uranium" became a dirty word.

Many firms, like my own, with incomplete programs of financing, felt these effects and our plan for progress in the development of power for peace were suddenly diverted up a dead end street.

Then, almost in the same breath, the Atomic Energy Commission told us that the Nation must be engaging in increased programs of exploration and development to find additional reserves of uranium. There seemed to be no logic to the pronouncement for even a child knows that programs of exploration cost money and involve great measures of frustration, disappointment, and physical energy, planning, and research.

These AEC announcements had the effect of casting adrift an industry already dedicated to the principles of national security and common defense.

On the one hand were were told to live within the capacities of presently authorized mills and on the other hand we were urged to speed up exploration for more reserves.

It is in this unhappy and uncertain economic climate that we have been operating, without further direction or guidance, for the past 4 months and I say to you, gentlemen, that the time has come for action and direction if we are to preserve the industrial complex we have brought together. We must do some concrete planning that will be attractive to those who have invested hard-earned dollars in the raw materials side of nuclear energy program.

There are a few, but only a few, bright spots on our horizon. Chief of these is that it lies within the power of the Federal Government to untangle the confusion created by the Atomic Energy Commission and get us pointed in a more favorable direction.

Chairman DURHAM. Are you actually in the mining business?

Mr. MCMEEN. Yes, sir; we are producing today.

Chairman DURHAM. What type of ore do you mine?

Mr. MCMEEN. Uranium.

Chairman DURHAM. What type of ore?

Mr. MCMEEN. We have a secondary deposit. It is black ore. We have a blocked-out tonnage in excess of 200,000 tons. We are a small mining company.

I represent here today, I hope, the independent miner.

Chairman DURHAM. Do you have a mill?

Mr. MCMEEN. No, sir. We have a mill within 12 miles of us that puts us on an allocation.

Chairman DURHAM. Have you sold any ore at all?

Mr. MCMEEN. Yes, sir; we have shipped approximately 2,500 tons. We have been in the process in the last 2½ years of developing this ore body. We have over 5,000 feet of tunneling in the hills, 12 by 12 main tunnels and 6 by 6 tunnels off the main tunnels. Our ore is definitely blocked by drifting and drilling.

As I have stated here, we have drilled over 400,000 feet of hole in the uranium business.

Also, there are the strong voices of the distinguished Members of the Congress from the Rocky Mountain States that can be heard above the headlines or satellites and missiles.

And, thirdly, there is the youthful vitality of our own industry that is neither tired or depressed by the events of recent months.

Last December in our magnificient State of New Mexico, our State economic development commission sensed the impending disaster to the uranium industry and decided to do something about it by sponsoring a forum for the consideration of problems created by the ivory tower directives from Washington.

We of the uranium industry pleaded our case, forcefully and intelligently, before this informal seminar. But much of what we said was lost from public view by the events at Cape Canaveral and other news capitals of the world.

There were resolutons, editorials, and promises for action from many important sources. But the action we treasure above all are your current hearings on AEC's uranium procurement policies.

In a way you gentlemen represent to us the court of resort, for indeed if we do not get a positive mandate from the Federal Government about the future of the uranium-producing industry, we can become listless in our goals, tranquil in our activity, and perhaps stagnant in our production aims through the current Atomic Energy Commission buying cycle.

The opportunity of appearing before you today is the fulfillment of a promise made to our industry by the gifted members of our New Mexico congressional delegation. The dedication of Senator Clinton P. Anderson and Senator Dennis Chavez is well known to everyone in this room. And there is tremendous respect in Washington and at home in New Mexico for Congressman John J. Dempsey.

But perhaps not all of you have come to recognize the towering ability of our junior Member of the House of Representatives, my good friend, the Honorable Joseph M. Montoya. Joe Montoya was born in New Mexico and knows our people and our problems. Like all of us who live in New Mexico, he has a fierce loyalty to everything that is good for this 47th of the 48 States.

Permit me, please, to quote you just a few words of the inspiring message Congressman Montoya had for last December's uranium industry forum in New Mexico, when he said in part:

> The uranium industry in New Mexico is in its infancy as it is everywhere, but here in New Mexico is where the great pioneers of the industry began to show the world what uranium means and what its production involves. It involved tears, it involved pains, it involved sacrifices, it involved going out and begging for money, it involved seeking investors in every category in our economic life. Yes, it was a hard fight from the beginning and the fight is not over.
>
> True to form, it began to evolve as a healthy industry dedicated to the task of supplying our Government that which our Government needed to be a first-rate power in the world. And we have not been apprised of any need for curtailing the advances that we have made, or paralyzing the effort that has been programed for the future.
>
> On the contrary, many dollars have gone into investments in the uranium industry programing for the future, and as your desire was to help your Government, as well as to make your business a success, I feel there is a corresponding duty on the part of Government to see that you have a stabilized program for the future to see that you maintain stability in your industry, because only by doing so can this precedent be true enough to encourage other endeavors, and on behalf of America in the future in other segments of industry. This is the true American philosophy.
>
> I feel that the Congress has started, in lead and zinc industries, to carve out a direction which will inform particular industries of the plans and programs that they should initiate. I feel that the uranium industry, being in its infancy, also requires the attention of Government and of Congress so that you people and the stockholders which you represent, will have faith in the future of your companies, faith in your industry, so that all banding together will, in concerted action, promote the benefits that will be derived from uranium not only for defense, but for peacetime uses. It is only in that respect that we can evolve as a strong industry for the promotion of a greater America.

And so spoke Congressman Montoya in December, echoing the wise feelings of Senator Anderson, Senator Chavez, and Congressman Dempsey. Our State may only have four Members of the Congress, but they do a tremendous job for all America.

With this sort of backdrop, I would like to give you a few thoughts that are based on my own experience in banking and uranium and a firm conviction in the future of our industry. I do not come to you with any corporate ax to grind, nor have I been sent here by any pressure group to incite dissension or to further confuse the issues of uranium procurement.

I do seek from you an understanding of a serious situation that compels the small uranium producer to look, and properly so, to his Government for direction and guidance.

It is entirely possible, therefore, that what the small producer thinks and feels will be helpful to the Government in supplying this guidance and direction.

Chairman DURHAM. You said something about the effect on stocks?

Mr. MCMEEN. Yes, sir.

Chairman DURHAM. For instance, nobody spoke of that at all today. Say your annual stock had been selling for $10. What is it worth today?

Mr. McMeen. I think possibly Mr. Bokum can answer that question.

I would say that your stock is worth approximately one-third of your evaluation today.

Chairman Durham. Is that true all through the industry?

Mr. McMeen. Yes, sir. Congressman Dempsey can answer that, I am sure, very well there. He was at our forum in Albuquerque, December 9.

Representative Dempsey. They said it went down. I do not recall how much.

Chairman Durham. I was trying to get a general picture of the whole field.

Mr. McMeen. I would say the stocks decreased two-thirds.

Chairman Durham. That is since last October?

Mr. McMeen. Since the date of last October.

Only a few short years ago, when the proven domestic uranium ore reserve was 5 million tons in 1953, our Government had the uranium industry on its toes, alert to seek new reserves. We pumped millions and millions of dollars into exploration that paid off in bonanza style, in New Mexico where the region near Grants, known as Ambrosia Lake, has revealed a proven ore reserve in excess of 30 million tons.

Just think of that. In one area alone, we have in 1958 an underground reserve 6 times in excess of that for the entire Nation just 5 years ago. And in this period the national reserve has jumped to 70 million tons.

This is American enterprise in its pure form, the Government states the need and private enterprise comes up with the end result.

As of this moment, the industry's reward for this phenomenal development program is that we are told to freeze mill construction and yet to go out and find more uranium.

This amounts to nothing more and nothing less than what some politicians call gobbledygook.

In order to restore integrity to the uranium-producing industry, we have got to have commonsense thinking and commonsense planning.

To my way of thinking, uranium is the power source of tomorrow. You don't have to be a reader of science fiction to know that in the decades ahead the most remote corners of the world will be lighted by nuclear power and the great machinery of the earth's industry and commerce will get their muscles from the tiny uranium atom.

And now before us unfolds like magic the immense potention of outer space, where the most feasible fuel will be nuclear fuel, since it is obvious that the great cargo carriers of the space age will not have the capacity to lift colossal loads of conventional fuels, like coal and oil, to the space stations of the next generation. Therefore, our Nation's uranium reserve, having already made a mighty contribution to our common defense, becomes more valuable than all the gold in Fort Knox, and should be treated as such.

To help the uranium industry consolidate and advance its position in the commerce and trade of our Nation, it is my recommendation that the Government consider a program of cash loans to uranium producers for proven ore reserves in the ground. Such a plan would allow the uranium operator fluid-cash position that will make accelerated exploration a sensible thing for us to do. By this I do not

imply that the industry comes to you with the tincup out, by any means. We are realistic business people, not charity cases. I would propose that these advance loans be repaid to the Government at prevailing interest rates out of operating profits at the time the ore is shipped to the mill.

As matters stand right now, no banker of my acquaintance, and that includes my own father, will loan a nickel on proven uranium reserves because of the confused Atomic Energy Commission policies on procurement.

Chairman DURHAM. That is on proven reserves, too?

Mr. MCMEEN. Yes, sir, and after I finish my statement here, I would like to discuss that with you here, about the proven reserves.

It is necessary for the Government to outline a program whereby we will know what they consider proved reserves. And then, if we can borrow money on those proved reserves as secured by our ore bodies, we are not asking for charity, we are not asking for subsidy, and we will pay the Government back out of our production at the prevailing interest rate at the time that product is removed from the ground.

Now, I am here to offer, to give you the best I can do. I have been in the uranium business since I quit the bank in 1954. I was a major stockholder in the first underground operation in Grants, N. Mex. We sold that operation and diverted our interest to a higher level where we would not have to mine so deep.

And, at this point, I emphasize that I am pleading the case of the producer of ore as it comes from the ground, and not that of the milling firm that refines the ore into finished concentrate.

What I say may mean subsidy in Government language, but it is a bare necessity if we are to survive as an industry. The United States Government fathered our industry; it has been our only customer, and cannot turn its back on us in this atmosphere of indecision.

Of the uranium management people I have discussed this money crutch with, not one has been negative to the plan. Some of the bolder ones even suggest that we should go a step further and ask for the outright purchase of proven uranium reserves in the ground, but I do not go this far. There could, of course, be a secondary program to encourage exploration for further uranium reserves by prompt Government payment for successful drilling costs.

In the instance of my own firm, we have pursued new uranium through more than 400,000 feet of test-hole drilling on properties in South Dakota, New Mexico, Utah, and Colorado. More than half of this was accomplished at our only producing mine, the McLeod mine, near Edgemont, S. Dak. And, believe me, gentlemen, this is expensive.

Turning, if we may for a moment, to another factor in the simple economics of uranium mining, I would like to point out how heavily the element of time weighs upon each one of us, the large and the small. From the time an ore body is blocked out until ore is actually coming to the surface in commercial quantities, there is a time lapse of approximately 18 months. And these are 18 months without revenue and preceded by an even longer period of discovery, land details, and the vast number of other administrative hurdles that must be cleared before the first shaft is put down.

Only last evening I learned of a firm with no milling contracts that had invested more than $600,000 to develop an ore body in New Mexico, only to learn in October that the Atomic Energy Commission had closed the door on market arrangements of this ore.

America today, as you well know, is buying uranium in Canada and elsewhere in the world at prices far above that being paid for domestic production. The defense to this is that these commitments were made on a long-term basis when the prospect of more than limited domestic production was small indeed. But now that America has a seeming abundance of uranium, the carefree purchase of imported uranium goes on while the domestic producer ponders the future with a heavy heart.

Now, I am a firm believer in American policy. I believe that we can do it. I am not worried about it.

Chairman DURHAM. You believe charity begins at home?

Mr. MCMEEN. Yes, sir; it certainly does. We were told, as recently as last month, that we could soon be seeking sales outlets in foreign markets. Purchasers are to be licensed by the Atomic Energy Commission, the press reports, but we are given precious little guidance beyond this.

Being the children of the AEC program, I suggest we should be looking to AEC for the kind of programing we, as an industry, should be engaging in at the end of the current AEC buying period, say, beyond 1962 or 1966. Perhaps we, as an industry, should be turning to the world of science and invention to tell us exactly where the commercial applications of uranium lie beyond military requirements.

If it is true, as was spelled out to this same Joint Committee a few years ago, that there exists a $30 billion market potential for the foreign development of power reactors, we should be told what part of this gigantic market belongs to the domestic uranium-mining industry and over what period. Otherwise, how can we be planning intelligently for the future, both technically and administratively.

My personal observation is that the Atomic Energy Commission has done a poor job in communicating basic problems and fundamental developments to the small uranium producers. Most of what I know I read in the newspapers or the trade publications.

In the field of communications it may also be that we, as an industry, are not doing a proper and effective job in communicating our thinking, our problems, our good points and our bad points, to our elected and appointed officials in Washington. The small producer maintains no lobby in Washington and we rely principally upon our own State delegations to convey our message to the Congress. This is a burdensome task for New Mexico's delegation to the Congress, for we have only 4 men to carry the full responsibility for the entire State which, incidentally, contains more than 70 percent of the known domestic uranium reserves.

We are fortunate in having two of our most distinguished citizens of New Mexico—Senator Anderson and Congressman Dempsey—as members of this committee.

When last October's drastic AEC action was announced in a very subtle way, it was these two celebrated individuals who stepped forward and rallied around the uranium producer. There were warm

words of encouragement from Congressman Dempsey, who told a meeting at Albuquerque in December, and I quote:

I will insist that the AEC restate its objective and its program of uranium so producers of the United States can operate accordingly. The Atomic Energy Commission should immediately advise the producer what markets and what reimbursement they might expect. I want you to know that there will be a hearing in Washington on this subject and it will be gone into very, very thoroughly, and I am sure that the explorers, the people who are searching for uranium, will not suffer any great loss. I cannot make a promise for the Commission; I cannot make a promise for the Congress, but I do know they will want to see these people treated properly.

With these words Congressman Dempsey gave us encouragement in a dark hour and we are grateful to New Mexico's delegation for the part they have had in making it possible for us to participate in your considerations of AEC's procurement policies.

As we approach what lies ahead, we do so with confidence for there are many factors on our side. We are a young industry, composed in the main of young men with vision and persistence that is typical of the growth of American industry—Phillips Petroleum, the Atlas Corp., Kerr-McGee Oil Industries, Anaconda, and so on—are industrially diversified in a pattern set by sound and proven corporate philosophies.

Accordingly, the small uranium producer will not overlook the values of diversification in contemplating the future.

Personally, I take great pride in the interests I serve in the Rocky Mountain area and am pleased with the opportunity of appearing before this distinguished body. If I have brought you nothing more, I have brought sincerity and honesty.

The course of this committee on the matter of AEC procurement policies will, I know, come as the result of calm and sober deliberation of the problems brought to you in these hearings. I only hope you will bear in mind that, in the Rocky Mountain area, where uranium has its deep grassroots, the waters are troubled.

I would like to read to you one bit of evidence that will help you capture the mood of the industry and its spokesman. These are the first three paragraphs of an editorial appearing in the February issue of the Uranium magazine, an authoritative trade publication. This editorial is entitled "Starvation in the Midst of Plenty," and I quote:

Some uranium producers have it good. They have contracts or dependable marketing arrangements for their ore and they couldn't be happier than they are.

Then there are large numbers of producers and would-be producers who are bitterly unhappy and demand that the present intolerable conditions be changed. They complain that the market for their ore suddenly has disappeared.

The simple truth—

and this is in italics—

is that the United States Government, as represented by the Atomic Energy Commission, has gone back on its word. The uranium industry is the victim of the most flagrant case of promise breaking since 1933 when the Government repudiated its history pledge of redeem its paper money with gold upon demand.

These words are straws in the wind.

In conclusion and by way of summary, I restate the four prime recommendations I bring to you this afternoon. One, that we have a curtailment of purchases of foreign ore. Two that the Government

establish cash loan policies on proven ore reserves, as I have outlined earlier. Three, that there be established independent buying stations for groups of small producers based on blocked tonnage and not on guesswork. Four, that we of the uranium-producing industry be given at the earliest possible moment a full and complete clarification of the AEC's policies on procurement. I thank you.

Chairman DURHAM. Thank you very much for an excellent statement.

You say you did not have but 4 Congressmen, but you have 4 good ones.

Mr. MCMEEN. We figure they do the work of about forty.

I would like to just take a moment of your time, Mr. Chairman, and I would like you to ask me questions about this loan policy, because that is very important to the small man, if you think that could possibly be a solution.

Chairman DURHAM. I thought that nobody had spoken to that. I think, after all, we should be interested in it because the American investor has taken a chance and taken the Government out of the operation, which of course, we would all like to do, but after all, I think we have a responsibility to people who invest their money in private enterprise, especially when it is used entirely by the Federal Government, which it is. You cannot sell your product anywhere else in the world under the laws and regulations.

You have no foreign market, and still we are creating a foreign market in competition with you.

Mr. MCMEEN. My plan as I propose here—let me go into it just a little bit further.

I propose to leave the reserves in the ground. The reason for that is this: National security.

If we take our reserves out of the ground, put them into 235 or yellow cake, then it is very easy to have that destroyed. It is very easy to destroy it.

Now, if we leave the reserves in the ground and say you would loan a dollar a ton on a certain grade ore—I develop a million tons, you loan me a million dollars—then you can go ahead and develop more reserves. Ten years from now we will have mined 70 million tons according to the AEC, but we will still have 70 million in reserve for what lies ahead. We do not know what lies ahead.

The way it is now, in 10 years we are out. Right now the small producer is out. But if we keep it in the ground, atomic bomb or hydrogen, nothing can destroy those reserves in the ground. We take our programs, we drill our ore, and then we mortgage that ore body to the Government. And the Government has a complete control of all the ore where they know, in case of an emergency, if they have to have a crash program, that they can get 200,000 tons from this deposit or 100,000 tons from this deposit. They have a complete record of all uranium in the country and it is in the ground where it cannot be destroyed.

If we were to have an attack today and all of our industrial facilities were destroyed, we still have the knowledge.

Now, if we have the key to the power, it would possibly be that it would be much cheaper to build one reactor that would supply a larger area than it would be to try to redo our electrical setup.

Chairman DURHAM. That policy has been adopted in some of the thinking of the Interior Department through the years. Of course, it costs a large amount of money. That has been a policy for years.

Mr. MCMEEN. The main thing is that it would not cost the Government as much money as it would to refine it into yellow cake or 235. In other words, if they buy it from me, they pay me on ten-hundredths, $3 a ton. Whereas, if they loan me money on it, they lend me 50 cents or a dollar.

Chairman DURHAM. Your theory there, of course, is the fact that there is a good deal more of it in the ground than we know about at the present time?

Mr. MCMEEN. My theory is that we will not have to spend as much money. My theory is that it will be in the ground and it will be on call at any time.

Chairman DURHAM. You will know where to get it?

Mr. MCMEEN. Yes, sir, and it cannot be destroyed by any means known to man today if it is under the ground.

Now, the other one that I propose there, the second, of course you are all familiar with the curtailment of the foreign purchases after the end of the current buying cycle that there be established independent buying stations for groups of small producers based on their blocked tonnage.

If the Government would inspect or go over these ore bodies and say, well, you have 100,000 tons here, you have 100,000 tons, now your economical operation will be 200 tons a day or 500 tons a day, now we will set up an ore-buying station here and you two companies can ship to this ore-buying station at a certain rate, then we can establish our cost and our income to get our investment back.

You see, nobody, except the promoter and the people that sold their properties have made any money out of uranium. It is all in the ground right now. We have been working 2½ years to get this ore body in position to start shipping.

I can start shipping 500 tons a day tomorrow, but I have maybe a 20-ton-a-day allotment, so I cannot operate and expect to get the return of my investment in less than 20 years.

Chairman DURHAM. Somewhat like the farm program?

Mr. MCMEEN. Yes, sir.

Mr. TOLL. Why is not a mill a better approach than a buying station, because, with a buying station, you have to stockpile the raw ore. In the mill you can stockpile the concentrate?

Mr. MCMEEN. What I had in mind was a simple mill operated by all of the independent producers that have blocked ore. The people that have gone and put their money in the raw earth, they are the people that deserve to get the depreciation on the mill. The people that have blocked reserves, we could get together and centrally we could have a mill, and then we could have a buying station close to our properties. Then all of it could be shipped to this 1 mill or maybe 2 mills or 3 mills.

Chairman DURHAM. Would there be any way to find out the accurate amount of dollars that has been put into the uranium mining business by all companies as far as stockholders are concerned?

Mr. MCMEEN. You mean as far as the investments that have been made by the individual public of America?

Chairman DURHAM. By the corporation such as you have. You have a corporation?

Mr. MCMEEN. Yes, sir.

Chairman DURHAM. Is there any way we can find out how much you have invested in New Mexico?

Mr. MCMEEN. I think the best way that you gentleman could find out how many dollars have been invested in the actual forming of companies and the actual development of ore would be through the AEC. That is about the only place I know. They know how much money I have spent. They know how many holes I have drilled.

Chairman DURHAM. I was not thinking they had that kind of information.

Mr. MCMEEN. You see, the AEC, prior to the latter part of last year, would come to your properties and log your holes and keep a complete record of your reserves. Now they do not even do that. They used to sort of half-way share the expense of it, but they quit last December, I believe; that is the last time I had a hole logged by the AEC.

Chairman DURHAM. Are there any further questions?

Representative DEMPSEY. No.

Chairman DURHAM. Thank you very much.

I will place in the record the following documents:

A statement submitted by Richard R. Spurrier, Santa Fe, N. Mex., on behalf of the Santa Fe Oil Co.

A letter dated February 15, 1958, from Black Jack Corp., Santa Fe, N. Mex., enclosing a statement submitted by the Black Jack Corp.

A letter from the Wyoming Uranium Corp., addressed to Senator Albert Gore.

A telegram dated February 24, from W. Rodney de Villiers, president, Rio de Oro Uranium Mines, Inc., Albuquerque, N. Mex.

A letter dated February 20 from Green Mountain Uranium Corp., Douglas, Ariz.

A letter dated February 18 from Minor, Mee & Co., Sante Fe, N. Mex.

(The material referred to follows:)

My name is Richard R. Spurrier. My residence is in Santa Fe, N. Mex. I am here representing Santa Fe Oil Co.

My experience in uranium has been as a consulting engineer and geologist making evaluation reports. I have done a limited amount of prospecting, but have seen tens of prospects. I was, for nearly 9 years, State geologist and director of the Oil Conservation Commission of New Mexico. I resigned in 1954 to consult in uranium, oil, and gas.

My attitude is that this committee is looking for constructive criticism of the Atomic Energy Commission and its methods of operating and policy. I believe that the Atomic Energy Commission made a very serious error in the October announcement by making the policy known out of a blue sky, without notice or hearing.

As a suggestion to this committee, I recommend that the Atomic Energy Commission should be required by statute to give notice and allow hearing before making policy decisions of such far-reaching effect. The most unfortunate aspect of the October declaration was its effect upon the individual prospector and operator. He was, in many cases, forced out of business. The major companies with proven ore and mill contracts can weather the storm.

I do not intend to pit the so-called little man against the mighty majors; rather, I aim to suggest to the committee methods of maintaining a healthy situation in exploration, financing, and production of uranium.

For nearly 25 years the oil industry has been policed by State regulatory bodies, and the effect has been to (1) avoid Federal control, (2) give every oil producer an opportunity to produce and market his fair share, (3) avoid waste both above and underground.

If the Atomic Energy Commission continues to negotiate every contract lower than the previous one, and give foreign producers a better price, none of the above can be accomplished.

The Atomic Energy Commission now claims about 100 million tons of commercial uranium proven; this I doubt. This reserve is calculated to last beyond 10 years at the present rate of consumption. This is fine, but what will happen at the end of the 10- to 12-year period if there is no encouragement for exploration in the meantime?

It is not my recommendation that existing contracts within the Nation be cut, rather that a system be employed to provide for milling and marketing new ore and thereby maintain the incentive to explore.

BLACK JACK CORP., *Santa Fe, N. Mex., February 15, 1958.*

Mr. JAMES T. RAMEY, *Executive Director,*
Joint Committee on Atomic Energy,
Congress of the United States, Washington, D. C.

DEAR MR. RAMEY: I am enclosing a copy of the statement prepared by me for Black Jack Corp. which will be submitted by one of the witnesses in triplicate for the record during the 202 hearings February 24 and 25, 1958, to be held by the Joint Committee on Atomic Energy.

I want to take this opportunity to thank you for your cooperation on behalf of the uranium industry. I cannot see how the picture of this industry can be changed any way but for the better.

Sincerely yours,

LYLE E. TEUTSCH, Jr.,
Vice President.

STATEMENT PREPARED BY BLACK JACK CORP. TO BE SUBMITTED DURING THE 202 HEARINGS OF THE JOINT COMMITTEE ON ATOMIC ENERGY

Black Jack Corp., a Delaware corporation, was formed by the private subscription of $350,000 during September 1957. The corporation was the successful bidder on 15,436.14 acres of Indian lands at a Navaho alloted land sale. The total bonus bid on this acreage was $270,118.24, of which 25 percent was paid at the sale and the remaining 75 percent was to be paid 30 days after approval by the Bureau of Indian Affairs. This acreage is the sole asset of Black Jack Corp. and was acquired just prior to the speech on October 28, 1957, of Mr. Jesse C. Johnson, Director, Raw Materials Division of the Atomic Energy Commission.

Under the terms of the Indian leases it is necessary to spend $10 per acre per year to explore for uranium, and if uranium in commercial grade is found, it must be diligently mined. However, under the policy stated by Mr. Johnson, there are to be no additional commitments on mill capacity, and therefore there would be no market for any ore found on the Indian allotted lands. It would be impossible to operate under the terms of the Indian leases in the light of Mr Johnson's statements. Black Jack Corp., therefore, requested and was granted an extension until March 5, 1958, for paying the $218,509.82 which represents the 75 percent balance due on the bid at the Navaho allotted land sale. The reason for the Department of Interior granting this extension was the hope that Congress would take such action to insure a market for Indian ores as they are developed.

It is well known that the aim of the Department of Interior through the Indian Commissioner is to make the Indian a citizen of equal standing as soon as possible. This can only be accomplished by the development of their natural resources.

It is the hope of Black Jack Corp. that a policy can be established which would insure the corporation the sale of any uranium discovered on Indian land over a period of 10 years. In other words, if the corporation through exploration and development defines a commercial grade ore body, it would be granted the right by the Atomic Energy Commission for milling capacity which would insure the mining of the ore discovered over a 10-year period. This milling

capacity could either be granted to the corporation as a new mill or the facilities of an existing mill could be increased. A solution of this nature is going to be necessary in the uranium industry to insure exploration and development. Even the major companies have stopped their exploration and development programs because of the uncertainty in the AEC policy. No one is sure now what the reserve picture is in this country or what the needs for uranium will be in the future. I do know that unless steps are taken to correct the effects of Mr. Johnson's speech, the uranium industry will stagnate and when uranium is needed in the future, it will not be available.

CORAL GABLES, FLA.

Hon. ALBERT GORE,
Senate Office Building, Washington, D. C.

DEAR SENATOR GORE: I am writing to you, as chairman of the Subcommittee on Raw Materials (Joint Committee on Atomic Energy), on behalf of the 6,000 stockholders of the Wyoming Uranium Corp. We would appreciate any efforts which you or your committee might make on our behalf with the Atomic Energy Commission. We desire to obtain an interest in a mill as an outlet for our ore. If we do not obtain a substantial mill capacity, our stockholders will suffer considerable financial loss. They purchased their stock on the good faith that the Government would provide a market. This faith was based on many statements and actions of both the AEC and the Congress. Enclosed is a copy of a letter I sent to our stockholders on November 15, 1957.

WYOMING URANIUM CORP.,
Lander, Wyo., November 15, 1957.

SPECIAL REPORT TO STOCKHOLDERS

YOUR NEW CORPORATION: GREEN MOUNTAIN URANIUM CORP.

Green Mountain Uranium Corp. is, in effect, a merger of the uranium properties of Wyoming Uranium Corp. with the needed financial backing and mining know-how of the Phelps Dodge Corp. On September 3, 1957, Phelps Dodge Corp. organized Green Mountain Uranium Corp. under the laws of Delaware. On October 11, 1957, a directors meeting was held for further organizational purposes. Class B stock of Green Mountain (51 percent of the stock outstanding) was issued to Phelps Dodge and Phelps Dodge transferred $250,000 to the new corporation for initial mining operations, which should begin in the near future.

Wyoming Uranium stockholders will receive one share of stock in Green Mountain Uranium Corp. for each share of Wyoming. This will be a tax-free exchange. Wyoming Uranium stockholders will receive class A stock in Green Mountain, which entitles them to receive 75 percent of the first $1 million in dividends and 49 percent thereafter. Dividends to Wyoming Uranium stockholders in Green Mountain will be based on both mining and milling profits as may be available to Green Mountain.

Hepburn T. Armstrong, president of Wyoming Uranium Corp., and C. Allen Elggren, legal counsel for Wyoming Uranium Corp., will be directors in Green Mountain Uranium Corp. The other three members of the board and the active officers of the new corporation have been selected from the executive staff of the Phelps Dodge Corp.

Instructions and letter of transmittal relative to this exchange of stock are enclosed herewith and should be read and followed carefully by all stockholders.

PRESENT VALUE OF WYOMING'S PROPERTY

The gross value of uranium ore drilled out to date and in the ground on Wyoming Uranium's property is $42 million. This figure is based upon a calculation by the independent consulting firm of Ford & Fox of 1,670,000 tons of good-grade uranium ore (containing 0.30 percent uranium oxide). Based upon end products at the mill, this gross value may be as high as $71 million. Utah Construction Co. engineers independently calculated Wyoming Uranium's ore-reserve potential at a reported figure of 1,350,000 tons; this calculation was made because Utah Construction is interested in acquiring our ore for their Lucky Mc

mill. These gross values give no consideration to mining, milling, and other costs. It should be emphasized that these calculations do not include any value for ores which will be developed by further drilling.

MILLING PROFITS

The question of milling profits, which are above and apart from the mining profits, is still being resolved. Phelps Dodge is presently negotiating with the Utah Construction Co. (Lucky Mc Uranium Corp.) to expand the Lucky Mc mill capacity sufficiently to handle the milling of Green Mountain ores. The expanded Lucky Mc uranium mill will be the third largest in the United States. These negotiations are subject to approval by the Atomic Energy Commission, which, we believe, will be forthcoming in the near future.

In a letter to Wyoming Uranium dated July 12, 1957, Phelps Dodge stated that, subject to working out finances, "Phelps Dodge will be entirely willing for the new corporation (Green Mountain Uranium) to be substituted in place of Phelps Dodge under the proposed arrangements (with Lucky Mc) and the new corporation would realize the entire milling profit." Wyoming's stockholders would thereby receive 49 percent of the profits from the milling of ore from Wyoming's property. Such milling profits may amount to several million dollars, in addition to the profits from mining. Phelps Dodge has stated, in effect, that funds must be borrowed on behalf of Wyoming's stockholders to cover the minority 49 percent of the mill financing, but Wyoming's officers interpret the lease-and-option agreement otherwise. Therefore, a friendly suit was filed which is designed to obtain a declaratory judgment from the court on this point. The filing of this suit will not in any way affect the going forward with the operations intended to be carried out under the terms of the agreement.

PROFITABLE FUTURE FOR URANIUM INDUSTRY

Your management is most optimistic about both the long- and short-term prospects of the uranium industry. The application of atomic energy to great numbers of peaceful, commercial uses is increasing daily and the demands for uranium ores in the future should be unabated. Recent pronouncements by leaders of this industry are already expressing concern for the sufficiency of reserves of uranium to meet foreseeable demands.

In a recent speech in New York City, Jesse C. Johnson, Director of Raw Materials Division of the Atomic Energy Commission, said: "The search for new uranium supplies must be continued on a broad scale if we are to achieve the atomic-power development anticipated in the next 10–20 years."

The Wyoming Uranium Corp. will now be dissolved in accordance with resolutions (copies enclosed) adopted at the stockholders meeting on June 14, 1956. Your management wishes to express its thanks for the confidence which our 6,000 stockholders have shown during the period of our association. We wish to express our belief that your association with Green Mountain Uranium Corp. will be pleasant and profitable.

Very truly yours,

WYOMING URANIUM CORP.,
HEPBURN T. ARMSTRONG,
President.

In this and previous letters I indicated a market. Prior to November 1957, our stockholders paid an average price of 25 cents per share for almost 14 million shares, or a total value of $3,500,000. For them to receive a return of investment capital and a fair profit, we must have substantial mill capacity. We have the necessary ore, and Phelps Dodge will finance the operation through a subsidiary corporation, Green Mountain, in which our stockholders acquired stock in exchange for their Wyoming Uranium stock. The details of this arrangement are contained in the November 15, 1957, letter. If the AEC statement of November 1957 to cut out or curtail drastically milling is applied to our ore, then our stockholders will suffer sharp losses due solely to what I would term would be a breach of faith of the AEC. We have a potential of 2,000,800 tons of ore and, probably, substantially more—it is on this basis (as stated in our letter of November 15, 1957) and the prospect for a market for this ore that our stockholders made their investment. To mill this tonnage it would require a capacity of 550 tons per day. It is my impression, however, that the AEC might not allow us any capacity or might curtail our quota to something in the

neighborhood of, say, 200 tons. In such case, our stockholders would not receive a return of their investment much less a reasonable profit or profit commensurate with the speculative risk of their investment.

Perhaps I need not point out that the development of much of our Nation's mineral resources, which, at times, the Government strongly encourages for defense reasons, is based on willingness of investors to take speculative risks. If they lose because the mineral is not found, that is their risk, but to lose due to an unexpected shift in AEC market policy would be doing them a grave injustice. Yours and your committee's cooperation will be most appreciated.

Very truly yours,

HEPBURN T. ARMSTRONG,
President, Wyoming Uranium Corp.

[Telegram]

SAN FRANCISCO, CALIF., *February 24, 1958.*

JOINT COMMITTEE ON ATOMIC ENERGY,
House Office Building,

(Attention James T. Ramey, *Executive Director, Washington, D. C.*):

Circumstances beyond my control prevent my presence before Joint Committee as industry representative in 202 hearings now under way. I am founder and president of Nation's second largest producer of uranium ore. I strongly urge a complete revision in the recently announced policy of the AEC insofar as it effects a curtailment on our domestic industry. I am conversant with and heartily endorse the views of Mr. Victor Salazar, Albuquerque, N. Mex., who is to appear as a witness before your committee. The need for resolute actions by your committee and resultant legislation by the Congress is urgent both for the preservation of our status as the leading nuclear power and as a prevention of measures directed toward the extinguishment of our infant domestic industry.

W. RODNEY DE VILLIERS,
President, Rio de Oro Uranium Mines, Inc.,
Albuquerque, N. Mex.

GREEN MOUNTAIN URANIUM CORP.,
Douglas, Ariz., February 20, 1958.

Mr. JAMES T. RAMEY,
Executive Director, Joint Committee on Atomic Energy,
United States Congress, Washington, D. C.

DEAR SIR: We are informed that hearings before your committee are being held commencing February 24, 1958, at which representatives of the uranium mining industry are to appear in connection with the impact on the industry of the recent policy of the Atomic Energy Commission to deny applications for further ore processing mills. The purpose of this letter is to place before your committee the situation which confronts Green Mountain Uranium Corp. and its stockholders as a result of this policy.

Green Mountain Uranium Corp. holds extensive uranium mining leases and claims in the Crooks Gap area in the State of Wyoming; 49 percent of the stock is owned by approximately 6,000 shareholders who were former shareholders of Wyoming Uranium Corp., predecessor in title to Green Mountain Uranium Corp.

Prior to May 8, 1956, Wyoming Uranium Corp. had made substantial expenditures in the exploration for uranium ores on these properties. After that date, and up to October 1, 1957, Phelps Dodge Corp. expended in excess of $525,000 in further exploration on these properties, and paid into the Green Mountain Uranium Corp. treasury $250,000, as a result of which it acquired 51 percent of the stock of Green Mountain Uranium Corp. Parenthetically, it might be added that during about this same period Phelps Dodge Corp. also expended further amounts in excess of $525,000 in the exploration for uranium ores in the Crooks Gap area on properties other than those of Green Mountain Uranium Corp.

In June 1957 Phelps Dodge Corp. entered into negotiations with Lucky Mc Uranium Corp. involving an increase in the capacity of the Lucky Mc mill in the Crooks Gap-Gas Hills area from 750 to 1,750 tons per day, with 300 tons of this increased capacity to be used for the treatment of the ores from the Green Mountain Uranium Corp. properties. On August 2, 1957, Lucky Mc filed an application with the Atomic Energy Commission for this additional mill capacity, in which application the Green Mountain ore reserves were included in the total ore re-

serves intended to be treated by the increased capacity. At about the time the Lucky Mc application was to be considered by the Atomic Energy Commission, as well as other applications for mills, the October 1957 policy of the Atomic Energy Commission was announced, and this has precluded consideration of these applications.

We are advised that Mr. J. A. Mecia, of the Lucky Mc Uranium Corp., will appear as a witness at the forthcoming hearings of your joint committee, and in view of this it is not planned that Green Mountain Uranium Corp. have present a witness unless your committee desires otherwise. However, it is desired to bring to the attention of the committee the fact that the stockholders of Green Mountain Uranium Corp. have been encouraged to invest a very substantial amount of money in exploration for uranium ore reserves in the Crooks Gap area in Wyoming, and are now being left without any outlet or market for these ores.

It is believed that the proposed mill capacity of 300 tons per day contemplated in the negotiations with Lucky Mc Uranium Corp. will be adequate to permit a modest underground mining operation, and if a satisfactory contract can be negotiated with the Atomic Energy Commission for the required mill capacity and for sale of the yellow cake, it is believed that Green Mountan Uranium Corp. will be able to recover the investment of its stockholders with a fair profit. Unless such arrangements can be made, it is difficult to visualize any means whereby this may be accomplished.

We are not in position to evaluate the future demand for fissionable materials, however, we do believe that unless those who in the past have successfully developed uranium ore reserves in anticipation of the return of their investment and a profit commensurate with the speculative risk involved are given the opportunity to mine, mill and market their ore reserves, there will be little to encourage further exploration to meet demand as it materializes. Also, we would point out that unless adequate mill capacities and prices are provided for those who have already developed uranium ore reserves, then in order that they may salvage what they can fron their ventures it will be necessary for them to mine, if possible, only their highest grade tonnage, with resulting loss to the presently developed reserves.

We wish to assure you of our very deep interest in the problems confronting your committee, and, if desired, we will be glad to have a representative of this corporation appear as a witness.

Yours very truly,

GREEN MOUNTAIN URANIUM CORP.,
WALTER C. LAWSON, *President.*

MINOR, MEE & CO.,
Santa Fe, N. Mex., February 18, 1958.

HON. CARL T. DURHAM,
Chairman, The Joint Committee on Atomic Energy,
Washington, D. C.

DEAR SIR: The State of New Mexico and the uranium industry will be well represented in person at the public hearings commencing February 24. I would like, however, to include our opinions as investment bankers to those that have already been incorporated in your file.

Our firm was one of the underwriters in each of two important financings, i. e., Sabre Uranium Corp. and Quinta Corp. We also were an important distributor of Pinon Uranium which subsequently merged with Sabre. Approximately 1,500 of our clients own uranium stocks.

The venture capital risk taken by our clients was based upon the following:

1. The AEC announced a program of bonus payments for delivery to Government buying stations of commercial ore.
2. The contract policies already established in the United States and Canada to supply our need for an essential raw material.

When substantial reserves were indicated within the United States it became known that Eldorado Mining had given notice to the companies seeking mill contracts that they would have to meet a future deadline in the matter of proof of a commercial ore body of size to obtain a "bonus contract." As this deadline arrived, five companies including, Northspan, Stanrock, and Stanleigh, were granted sufficient extension of time to comply with the requirements of a "bonus contract."

We submit that similar treatment is due those who have successfully employed venture capital in the United States. Capital solely dependent on a

Government agency for any return, if successful, should not be frozen by an announcement that enough uranium for the period under contract has been committed. The risks taken in the interest of our national security and continental defense should be entitled to the opportunity to profit where commercial ore had been discovered prior to the October 1957 policy annoucement.

Respectfully submitted.

WILLIAM R. MEE.

Chairman DURHAM. The committee is adjourned until 10 o'clock tomorrow morning in room P–38 in the Capitol, the District of Columbia Committee room.

The afternoon meeting will be held here in this room, 1334.

The committee is adjourned until tomorrow morning at 10 o'clock.

(Thereupon, at 5:20 p. m., Monday, February 24, 1958, the committee recessed, to reconvene at 10 a. m., Tuesday, February 25, 1958.)

PROBLEMS OF THE URANIUM MINING AND MILLING INDUSTRY

TUESDAY, FEBRUARY 25, 1958

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D. C.

The committee met at 10 a. m., pursuant to recess, in room P–38, the Capitol, Hon. Carl T. Durham (chairman of the committee) presiding.

Present: Representatives Durham, Price, Dempsey, Van Zandt, and Hosmer; and Senators Pastore, Jackson, and Dworshak.

Also present: James T. Ramey, executive director; David R. Toll, staff counsel; and George E. Brown, Jr., staff member, Joint Committee on Atomic Energy.

Chairman DURHAM. The committee will come to order.

This is a continuation of the hearings under section 202 of the Atomic Energy Act of 1954 "on the development, growth, and state of the atomic energy industry."

Our first witness this morning is Mr. William W. Orr, executive vice president of the Uranium Ore Producers Association.

Mr. Orr, you may proceed.

STATEMENT OF WILLIAM W. ORR, EXECUTIVE VICE PRESIDENT, URANIUM ORE PRODUCERS ASSOCIATION, GRAND JUNCTION, COLO.

Mr. ORR. Mr. Chairman, members of the committee, guests, my name is William Orr. I am executive vice president of the Uranium Ore Producers Association with headquarters in Grand Junction, Colo.

Since the inception of our organization in 1948, the UOPA has sought to further the interests of the independent uranium operator. In pursuit of these objectives, the UOPA has been instrumental in the past in bringing about more uniform ore-sampling procedures at mills and buying stations; in bringing the prices paid for uranium ores to the present level, as provided under circular 5, revised; in helping to resolve the conflicts between the mining interests and the holders of oil and gas leases on Federal lands, and in many other areas where the lot of the independent operator might be improved.

Members of the UOPA have, in the past, appeared many times before congressional committees in behalf of the domestic uranium industry.

I cite these examples to provide you gentlemen with a little background on our organization so that you might better understand our reasons for seeking a hearing before you at this time.

For many months the executive board of our association has been deeply concerned over the apparent trend on the part of the Raw Materials Division of the Atomic Energy Commission to put the brakes on domestic uranium production. Our group has felt that this effort was in direct violation of the assurances given by the AEC to the domestic miner that he would have an unlimited market for his ores at a guaranteed price until March 31, 1962, and, further, that he would be provided with a substantial market for his ores at least through 1966.

Though this has been the general understanding within our industry, an increasing number of cases have come to the attention of the UOPA in which this so-called guaranteed market does not exist.

In an effort to focus national attention on this matter, our organization undertook a survey of the marketing problems which confront the uranium industry early last fall.

Before that survey had been completed, Dr. Jesse Johnson, Director of the Raw Materials Division of the Atomic Energy Commission, confirmed our worst fears. In a speech before the fourth annual meeting of the Atomic Industrial Forum in New York City late last October, Dr. Johnson told the delegates, in essence, that the Commission did not intend to permit a further expansion of domestic uranium production. He said that the requirements of the Federal Government for uranium for defense purposes had been essentially satisfied.

Since that time Dr. Johnson and other AEC officials have made it abundantly clear that the Atomic Energy Commission does not intend to enter into any additional milling contracts. This being a highly effective way to hold production at its present level.

Now, this action, I submit to you, is not only in violation of the promises and assurances given our industry by the Atomic Energy Commission, but it is also a grave threat to the continued health and well-being of this important segment of our economy.

I shall not burden you gentlemen here with past statements and promises made by the officials of the Commission. Rather, I should like to submit these for the committee in written form and to use my limited time here to cite a few examples of the effect which this cutback has already had upon the industry.

The fact that a serious market shortage exists throughout the uranium industry became clearly evident during the course of the UOPA survey which I mentioned a moment ago. The roots of this shortage lie first in the Commission's refusal to consider any additional milling contracts, save those already in negotiation, and, second, in the inadequate percentage which present contracts require for the processing of custom ore, that is, that ore which is mined by the independent operator not having milling facilities of his own.

State by State here are a few examples of the situation which our group found to exist.

By all means, gentlemen, this is not the complete list, but only the substantial ones.

Colorado: Along the front range of the Rocky Mountains many mines are faced with severe cutbacks or complete shutdowns inasmuch as there is no nearby mill.

The Vitro mill at Sale Lake City has been forced to impose tonnage limitations. One major mine in the area was slashed from a normal 1,800-ton per month output to 500 tons per month.

Still others have been completely cut off from milling facilities.

Utah: In the White Canyon district, the new Texas Zink mill at Mexican Hat has an approximate 800-ton per day capacity. Of this amount 200 tons per day must be devoted to custom ores.

There are at least 10 active producers in this area, several of whom are capable of producing this amount of ore alone. Yet, when producers have sought another market for their ores, they have been refused at the Government-owned mill at Monticello while privately owned mills have had to refuse such production in the face of the Commission's failure to alter concentrate purchase contracts to allow for the additional tonnages.

One producer shipping to the Texas-Zinc mill produced 5,600 tons in January of 1958. This operation has now been slashed to a 2,500-ton-per-month restriction.

Another firm in the Moab area, tributary to the Uranium Reduction Co. mill, has been forced to cut production from 10,000 tons per month to 6,000 tons. In the case of this operation, such curtailment spells the difference between a profit and loss inasmuch as the entire undertaking has been geared to the 10,000-ton figure.

New Mexico: In the Shiprock area the contract for the Kermac mill originally provided for a 300-ton per day output. This capacity was gradually increased to 500 tons per day. The Kermac interests, along with several independents in the area geared exploration and mining programs to this capacity assuming that the mill would be allowed to continue at this capacity.

In October of last year the Kermac mill was cut back to 300 tons per day. This action left many of the independent producers in a serious bind when they were faced with a sharp curtailment in the amount of ore which the mill was able to purchase.

In the Grants are independent producers who have always been faced with limitations imposed by the Anaconda mill at Bluewater. These have been based upon tonnage and grade of limestone ores, while no sandstones ores, which comprise 90 percent of the estimated reserves in the area, are being accepted.

I might say parenthetically here that we are perfectly cognizant of the fact that that Anaconda mill cannot accept anything but limestone ore and could not at the time it was built.

The Commission buying station at Grants requires negotiation with the Commission of the sale of either sandstone or limestone ores. Strict limitations as to tonnage and grade are maintained and contracts must be renegotiated every 90 days. The exigencies of maintaining a mining operation based on a 90-day contract can, I am sure, be appreciated.

South Dakota: The mill at Edgemont, which is a mill wholly devoted to the processing of custom ores, has been forced to begin imposing limitations on tonnages which are acceptable. This means independents in this area, too, are being forced to cut production, many times below the economically feasible level.

Texas: Vast ore reserves have been developed in south Texas. These are reported to be in excess of 1 million tons, yet no large-scale

mining operations can be undertaken because no milling facilities have been made available.

Several companies, the holders of substantial ore reserves, have attempted, without success, to negotiate a contract with the Commission to permit construction of a mill. Until this can be achieved the reserves must remain in the ground, as there is no mill within hundreds of miles.

Wyoming: Production in the Riverton-Gas Hills area has been limited from the outset of operations. These limits, the AEC has told us, were necessary due to the capacity of the Riverton buying station.

One mill is in operation now; another is under construction, and a third has been contracted for.

Expert opinion in the area is, however, that even this capacity will not be sufficient to cope with the large tonnages which the Wyoming uranium industry has proven itself capable of producing.

These examples which I have cited, gentlemen, can be authenticated, along with many others, from letters which are on file in the offices of the UOPA. They are indicative of the trend which has emerged within the past 2 years which threatens to become much worse unless there is a change in the current AEC policy.

As a result of the lack of an adequate market for present uranium production, together with the uncertainty concerning future AEC buying policy, particularly in the post-1962 period, and the failure of the commission to require that the terms of circular 5, revised, be met, exploration and development work has come to a virtual standstill.

I should like to quote Charles A. Steen, a prominent and successful prospector and uranium industry leader. In a recent issue of Uranium magazine, Mr. Steen said:

> Anybody who goes out and prospects for uranium now is a damned fool.

Many of the smaller mining operations have been forced to close down while those firms fortunate enough to hold milling contracts have been given a virtual whip hand in that they are in a position to force the smaller operators into closing down the properties or coming to the terms of the miller so far as tonnage and grade is concerned.

Further, this places these particular processors in a position to negotiate outright for the purchase of the independents' properties at the processors' terms.

It is the feeling of the UOPA that all of these matters can be resolved if the Atomic Energy Commission is required to live up to the promises and commitments already made to the domestic industry.

We feel that the commission has a clearly defined moral obligation to the men and companies who went out, at the Atomic Energy Commission's behest, and built a domestic industry from virtually nothing. Maintenance of a healthy industry can be achieved only if an adequate market is provided for existing ores so that continued exploration and development can take place and additional capital be encouraged to enter the industry.

You might naturally question the advisability of continued Government purchases of concentrates in the face of what we are led to believe is an adequate supply for defense purposes. It is not the desire of the industry to be subsidized. Given an even break with foreign producers, the domestic industry can survive and grow.

According to official Atomic Energy Commission figures, the Federal Government in 1957 purchased 35 percent of its total supply of uranium concentrate from domestic sources at a cash outlay of 34 percent of the total funds expended for this purpose. Projections by the Atomic Energy Commission show that by 1959 the domestics will be supplying 41 percent of the concentrates at only 38 percent of the total cash outlay.

Is it not reasonable to ask, then, that if a curtailment is necessary at this time that it be applied to the foreign producer first, when the per pound cost is highest for foreign ores?

We should like to submit for your consideration six basic points which we feel, if adopted, would alleviate the major problems which face us today.

1. Reallocation by AEC of ores to be treated to provide greater milling capacity for noncaptive or independently produced ores in existing milling facilities, the mills being required to take all reasonable amounts of amenable ores supplied by independent producers at least through March 31, 1962.

2. Authorization of additional milling facilities in areas where none are available or where the mill capacity falls short of ore production.

3. Curtailment of foreign ore purchases beginning this year to approximate the following formula:

1958, domestic ore purchases 50 percent of the total acquired by the Government; foreign ore purchases, 50 percent of the total.

1959, domestic 55 percent; foreign 45 percent.

1960, Domestic 60 percent and foreign purchases 40 percent, continuing on this 40 percentage split through 1962.

4. A firm restatement of AEC policy to assure the domestic producer that the guaranteed market will be a reality through March 31, 1962.

5. Clarification of the guaranteed uranium oxide concentrate price through 1966 to assure the position of independent operators and publication of such clarification in the Federal Register.

You gentlemen may or may not know that the only guaranty we have now is a press release from the Grand Junction operations office of the AEC. There are many producers who think this is rather thin ice to skate on in the post-1962 period.

6. Require existing and future mills to accept ore grades according to the schedule of prices contained in Circular 5, revised, together with revision of the now obsolete Carnotite-Roscalite provision.

It is our firm belief that should this program be adopted with your help, the industry's major trouble will be alleviated and we shall find ourselves in the healthy condition the Commission says it seeks to maintain.

Thank you.

Chairman DURHAM. Thank you very much, Mr. Orr.

At the top of the last page you note the possibility of these people who have these contracts arriving at a monopoly in this field. How many at the present time would you say have favored contracts? Do you have any idea?

Mr. ORR. Perhaps you misunderstood me. I did not refer to it as a favored contract. Our organization feels that those large millers such as the Union Carbide Nuclear Corp. and many of the others, most of whom are known to you, are in a position, particularly deal-

ing with the small operators now and again in the post-1966 period, to gradually put the squeeze on the man in the form of tonnage limitations at the present time, cut off haulage allowances which has already occurred, and in the post-1966 period, of course, to dictate the raw ore price to the point that the man is forced out, leaving the miller in an optimum position to move in and buy his property perhaps at 10 cents on the dollar.

Chairman DURHAM. How many have favored contracts today? Do you have any idea?

Mr. ORR. Milling contracts?

Chairman DURHAM. Favored contracts by being in the favored position.

Mr. ORR. I would say that all of those large millers, which would perhaps include six, are in that position. The 2 I think of immediately, of course, are the 2 that have been in the industry for years, Vanadium Corporation of America and Nuclear Carbide Corp.

Chairman DURHAM. In other words, you feel this will be narrowed down to six producers?

Mr. ORR. Six, and there are some who have been in the industry for years who feel it may even be fewer than that.

Chairman DURHAM. You speak of a survey you have made on that. Will you provide a copy of that for the committee?

Mr. ORR. Yes, sir; I will.

Chairman DURHAM. We will insert it in the record.

(The material referred to follows:)

A SURVEY OF MARKETING PROBLEMS IN THE URANIUM INDUSTRY TODAY

Prepared by Uranium Ore Producers Association, Officers and Directors, November 13, 1957

INTRODUCTION

Since its inception in 1948, the Uranium Ore Producers Association has made every effort to uphold the uranium ore producers rights and interests. As a result of the recent address by Jesse Johnson before the Fourth Annual Conference of the Atomic Industrial Forum it has become necessary for this voice of the uranium producers to unite all organizations and State officials associated with the uranium industry. This united effort will be necessary to safeguard the very survival of the industry itself.

It is the opinion of all of the uranium producers contacted that Mr. Johnson's speech was merely a testing balloon to determine just how much further the AEC can proceed with its present restrictions on domestic production.

This report is not intended as criticism of past AEC thinking and policy but instead is aimed at pointing out concrete hardships and dilemma now in existence in the industry. A different policy must be inaugurated by the Government at this time, and it must contain provisions and protection to the domestic miner. Not only have facts, figures, and AEC statements been set forth, but suggested solutions to the problems as well.

The following information indicates that drastic changes must be made now. If these changes are to be of benefit to the domestic producer it is necessary for the producer, producers organizations and their elected political representatives to make themselves heard loudly and clearly. This will require assistance in every form in making this, the uranium industries, stand for survival.

URANIUM ORE PRODUCERS ASSOCIATION,
OFFICERS AND DIRECTORS.

From the remarks prepared by Dr. Jesse C. Johnson, Director, Division of Raw Materials, United States Atomic Energy Commission, and delivered before the Fourth Annual Conference of the Atomic Industrial Forum, the following facts, figures, and calculations have been prepared concerning both domestic and foreign uranium production.

The purpose of the comparisons which will be presented herein is to demonstrate the desperate need for an immediate change in the apparent policy of the Atomic Energy Commission, as outlined by Dr. Johnson, concerning the distribution of milling facilities in the United States. It is also hoped that this material will point up the definite need for immediate renegotiation with the Canadian and British Commonwealth Governments of the uranium purchase contracts now in force between these powers and the United States Government.

The figures and calculations which follow clearly show the tonnages, costs, and other pertinent data on uranium production from all sources. (As reported by the Atomic Energy Commission, maximum production from all sources should be reached by 1959.)

Uranium production, costs, and percentages from domestic and foreign sources

Production (in pounds) [1] [2]	Percent of total	Total cost to United States	Percent of total value
1957:			
Domestic, 15,000,000	35	$157,500,000	34
Foreign, 27,000,000	65	301,050,000	66
1958:			
Domestic, 20,000,000	38	192,000,000	35
Foreign, 32,000,000	62	356,800,000	65
1959:			
Domestic, 30,000,000	41	279,000,000	38
Foreign, 42,000,000	59	449,400,000	62

[1] As contained in the Johnson speech.
[2] Calculated in pounds of uranium oxide.

The above figures give ample indication of the extra consideration being given the free world uranium producers by the Atomic Energy Commission to the detriment of the domestic uranium industry. They show that while the domestic industry is capable of producing more uranium at lower cost than that produced by foreign sources, these encouragements while the domestic industry is to undergo even more stringent production limitations than those which are now in effect. This is being done even in the face of factual evidence which proves that domestic uranium concentrate can be made available at lower cost and with the additional benefit of sparking a healthy industry and sound mining economy within the limits of the continental United States.

Instead of affording the domestic industry the right to grow and prosper as a reward for building an industry from virtually nothing, the AEC imposed cutbacks which, in turn, force production at a higher cost per ton. In addition to this artificially higher cost of production, domestic producers are being fored to strip their mines of high-grade ores while leaving millions of tons of recoverable low-grade ores in the ground where they may remain forever due to the unfavorable economic factors involved in mining low-grade ores exclusively. High-grade mining is made necessary by the forced, noncompetitive type of production which is being fostered by Government policy. As noted above, in the event of serious national emergency, much of the low-grade ore left in the ground could not be mined except at an exorbitant mining and production cost.

The obvious solution to the present situation would require the Atomic Energy Commission to curtail, somewhat, the production of the foreign sources while permitting the domestic industry, which was so laboriously and expensively built through the joint efforts of the Government and private enterprises, to go forward in a natural manner which will permit production of ore on the soundest and most economically feasible basis.

Such a program would benefit not only the domestic producer, but the Government as well, inasmuch as it would result in a lower overall cost for uranium concentrates and at the same time would permit most efficient and economical extraction of all presently known domestic reserves. The history of American mining further proves that in a situation such as is outlined above—when production is at a healthy level and prices are such that economic mining operations can be conducted—then exploration and development work will also continue at a high level thus assuring the continuing development of additional domestic uranium reserves.

Thus in the event of an emergency, the United States would not only have a healthy uranium industry capable of gearing immediately to the demands of

such an emergency with no lag time, but the Government would also have sparked the exploration and development of additional new reserves which could prove invaluable in an emergency.

The argument that it is better to rely on foreign sources in peacetime so that the domestic ores can be held in the ground for use in the event these foreign sources are cut off, is difficult to support for several reasons: (1) Such a policy discourages additional exploration and development forcing the domestic industry to deplete rather than augment its proven ore reserves. (2) It forces many mining firms to cease operations or go out of existence. This in turn means the loss of valuable time in reopening mines and undertaking operations once more in the event of emergency. (3) Much of the production from foreign sources comes from Canada, should a national emergency make it impossible to exploit these ore reserves, then it would be equally impossible to exploit the domestic reserves. (4) The danger of foreign ores falling into the hands of the U. S. S. R. unless the United States continues to buy them is a false argument. The ties which Canada and South Africa have to the United States and the free world make it somewhat difficult to imagine these nations' sale of strategic materials such as uranium concentrate to Russia if the United States were to cease sponging up the entire output.

Further, the oft-voiced argument that continued foreign-ore purchases are necessary because of commitments made by the Federal Government, is a little difficult to swallow in the face of the broken promises and side-stepped commitments which have been handed the domestic producer. Are the contracts made with foreign powers more inviolate than those made with the domestic producer? Is the American uranium industry to swallow cutbacks, restrictions, and broken confidences so that the Federal Government can "save face" with foreign producers. It is not proposed here that these foreign sources of ore be cut off completely. Instead, it is urged that if cutbacks are necessary—then let them be applied where they will do the least damage. Let them be applied to foreign sources. The percentage figures shown in the above production tables clearly show that a given tonnage cutback will be felt much less by the foreign producer who is supplying the preponderance of the United States concentrate supply than it would by the domestic producer. A fixed cutback, percentagewise, would be much less in the foreign than in the domestic picture.

Uranium reserves, production and costs, domestic

State	Present reserves	Present mill capacity (per year)	Number of years necessary to mill present reserves
	Tons	*Tons*	
Arizona	1,800,000	90,000	20.0
Colorado	3,300,000	1,342,800	2.4
Dakotas	600,000	108,000	5.5
New Mexico	47,000,000	3,620,000	13.0
Oregon-Washington	1,500,000	144,000	14.0
Texas	1,000,000	None	
Utah	5,700,000	900,000	6.3
Wyoming	17,000,000	648,000	25.0
Others	1,000,000	None	

A breakdown of the above figures gives sufficient proof that some areas in most States have not market for their ores due to location of properties. Despite this, the Atomic Energy Commission has announced a freeze on mill construction and capacity. This announcement is in the face of proven ore reserves in several areas which are sufficient to support additional milling facilities. As a consequence most of the producers in these fringe areas are being forced to close down or to drastically curtail production—sometimes to the point that economically sound mining practices cannot be pursued. This obviates any chance for further exploration or development in these areas. As a result, the moneys already expended in developing production in these areas will be lost forever.

It becomes apparent that the obvious unbalance of milling facilities so far as location is concerned, has fostered the abandonment of important exploration and development.

Evidence of such situations and unfair practices arising from these situations not on a localized or temporary basis but rather as a clearly defined area-wide pattern is contained in the attached letters from various producers in each district.

The solution is apparent.

The Atomic Energy Commission has only to honor obligations, statements, policies, and circulars which have been issued from time to time and which were clearly described as intending to foster a strong exploration, development, and production program for the domestic uranium industry. The continuing establishment of milling facilities as they are required, will result in the steady growth of the domestic uranium industry—such growth is of paramount importance to the sucurity and well-being of the United States and the Free World.

Contrary to the popular opinion that there exists and will exist until 1962 at least an assured market for all uranium ores produced under the Atomic Energy Commission's domestic buying program, increasing numbers of producers are discovering that a policy of quotas and curtailment is being pursued by the Commission.

This policy does not take the form of a formal policy announcement, rather, it is being pursued behind the scenes through a series of moves designed to "put the brakes on" the production of uranium oxide. Queried on the topic, AEC officials are quick to deny that there is any such attitude on the part of the Commission. They charge all such cases of quotas and restrictions to "temporary or localized" situations.

Such an answer might appear plausible when applied to only one area, but when viewed on an industrywide basis, it becomes rapidly evident that the curtailments are part of an overall plan apparently aimed at holding uranium production at its present level or even cutting it somewhat.

Briefly, area-by-area the situation at the present time is this:

White Canyon, Utah

Independent producers, seeking to assure themselves of a continuing market for their ores have consulted with officials of Texas Zinc Minerals and the AEC concerning the policy which will be pursued upon the completion of the Mexican Hat mill. The Commission contract in this area, as in all others, requires that at least 20 percent of mill capacity be devoted to custom ores. When it is pointed out that any one of several independent producers in this area could consume the entire 20 percent, producers are told that any additional production will be stockpiled. Indications are that such ore, when stockpiled, will not be paid for until such time as it is processed. One firm, COG Minerals, sought to sell the production from its upgrading plant outside the White Canyon area. The Vitro mill at Salt Lake City was apparently willing to accept the production. Commission officials, however, refused to alter the Vitro contract to permit acceptance of this concentrate and slime. Texas Zinc will accept only the concentrate and raw ore leaving 40 tons of 0.30 percent U–308 slime per day with no apparent market. Other producers in the White Canyon area have been told that the Monticello mill, operated by the Government, will no longer accept production from this district and will not, until such time as the Texas Zinc stockpile is filled.

Arizona

Ores produced in the Tuba City area at present have found an adequate market at the mill operated by the Rare Metals Corp. This mill, however, refuses to accept any ores under 0.20 percent U–308. Since there are substantial low grade reserves in this area, many mining operations which might prove economically feasible if under 0.20 percent U–308 ores were accepted are either closed or have never been brought into production. Producers shipping to the Globe, Ariz., buying station were cut off from a nearby market in June of this year when the Commission closed the buying station at Globe. One of the reasons given for closure, in the words of the AEC, were that "No private company has shown interest in or has submitted a proposal for the construction of a mill. Marcy Exploration, however, has entered into talks with the AEC concerning a mill at Bagdad, Ariz., and has also offered to process the Globe ores. Though these talks have been carried on for some months, the AEC has provided Marcy with no concrete answer concerning its attitude on mill construction in this area.

Texas

The vast ore reserves in south Texas, reported to be in excess of 1 million tons, at the present time are not being exploited to the fullest, due to lack of a market. Since the ore was discovered and proved 2 years ago, various firms, including Climax Uranium and Union Carbide, both holders of large tonnages of proven ore, have indicated interest in constructing a mill in the area. Climax Uranium and Union Carbide spokesmen indicate that the AEC has not been cooperative in working out an arrangement for milling facilities in this area.

New Mexico

The New Mexico independent producers are faced with quotas, curtailment, or refusal of ores at virtually every outlet in the area. At the Anaconda mill at Bluewater, limitations have always been imposed upon tonnage and grade of limestone ores which are accepted from independents. This mill will not accept any sandstone ores which comprise 90 to 95 percent of the reserves in the Grants district. The buying station operated by the Commission requires negotiation with the AEC for the sale of either limestone or sandstone ores. Strict limitations on tonnage and grade are maintained and contracts must be renegotiated every 90 days. Independent producers shipping to the "still to be completed" Homestake-New Mexico Partners mill, receive ore payment and settlement sheets only once a month, thus are completely in the dark as to average grade until the end of the month. Should the ore fall below minimum grade, the mill is not required to accept the ore.

Colorado

Independent production in the western part of Colorado, has, thus far, suffered least from the policy of quotas and curtailment. This is due, of course, to the fact that the area, being the oldest producing section, has had greater milling capacity to take up production. The Front Range of Colorado, however, is faced with severe curtailment or complete shutdown. Ores from this section have been shipping to the Vitro mill at Salt Lake City. On November 1, the Denver Golden Uranium Co., operators of the Schwartzwalder Mine, were informed by Vitro that their production would have to be cut from 1,800 tons per month to 500 tons per month due to limitations imposed by the AEC contract. Vitro has attempted to prorate the available mill capacity in this area among several producers while others have been cut off completely.

Wyoming

Production from the Gas Hills area of Wyoming has been limited from the outset by the lack of milling facilities and by the capacity of the Riverton buying station. Although two mills are now under construction in this area, they cannot meet the daily demands of independent producers if these operators are to be permitted to operate at their full capacity. Though Commission officials openly admit that mill capacity in this area is still below what is necessary, they have shown little inclination to enter into discussions with anyone for additional mill capacity. At one time a group of independent producers sought Commission thinking on the possibility that they construct a cooperative mill. They received no satisfaction whatever.

Since the inception of the domestic uranium program, the United States Government, through the Atomic Energy Commission, has in every way encouraged the exploration and development of domestic uranium reserves. The crime has been the establishment of a guaranteed market for ores produced. The Commission's actions and its statements issued through its personnel have been calculated to lead the uranium industry to believe that the guaranteed market has been not only for price alone, but also quantity. As a result of these inducements, private industry has poured millions of dollars into exploration and development of domestic uranium reserves, which Government officials did not believe existed in the United States. As a result, the United States today is independently assured of uranium supplies, both for military security and economic growth.

Dr. Jesse C. Johnson, Atomic Energy Commission Raw Material Division Director, in June 1956, speaking before the Uranium and Atomic Energy Conference at the Uranium Institute in Denver, Colo., when secrecy as to AEC reserve figures was first removed, announced that the production of the free world should be in excess of 30,000 tons of U–308 per year. In his remarks for delivery before the Fourth Annual Conference of the Atomic Industrial Forum on October 28, 1957, he stated that domestic uranium concentrate production is at

the rate of approximately 10,000 tons of U–308 per year, and by the end of 1959 it is expected to be 15,000 tons or more. He stated that the total free world production of uranium oxide should reach 40,000 tons or more the year ending 1959. As will be noted, the latter projections are based on the year ending 1959, which is not out of line with his remarks in 1956, consequently, it is hard to see why this point should cause his comments in the latter speech relating to the curtailment of expansion of the domestic uranium industry.

In his speech in June of 1956, Dr. Johnson also remarks: "However, the Commission from the beginning placed a major emphasis on developing domestic production. Our program was designed to encourage rapid mining of reserves. More domestic mining and milling operations have been planned to assure available ore by 1962. We hope that the extension of Government buying to the end of 1966 will result in long-range planning. The Government market should now carry through to the commercial market.

In speaking of price, Dr. Johnson stated "The price schedule had to provide the incentive for exploration. Prospecting and exploration entail large risk."

In referring to the extension of the guaranteed Government market through 1962, as announced in the release of May 24, Dr. Johnson said: "On May 24, the Commission announced a new domestic uranium procurement program for the period April 1, 1962, through December 31, 1966. This new program has the following principal objectives:

"(1) Maintenance of uranium production for our military and atomic power requirements.

"(2) Establishment of a guaranteed Government uranium market for a period sufficient to encourage long-range private exploration and development.

"(3) Protection of small mining operations.

"(4) Development of a commercial uranium market.

"(5) Protection against a possible major overproduction with rapid exhaustion of large ore reserves."

He further stated: "Although large reserves of ore had been developed, industry has been planning to mine as much as possible for 1962. We need exploration and development to support production after 1962."

In further commenting in this speech on the program after 1962, Dr. Johnson stated: "If exploration is as successful in the next 5 years as in the last 3, unlimited production could result in a uranium supply in excess of requirements with an unnecessary, rapid exhaustion of reserves. Long-range, well-planned operations generally result in greater total production. The *new* [italic added] procurement program provides that the Commission, at its option, may limit its purchases of concentrates derived from any 1 mining operation or property to 500 tons U–308 per year. The limitation, if exercised, should not handicap the industry. Each domestic mining operation still would be guaranteed an annual market of up to $8 million." It is well to point out that 500 tons of U–308 is the equivalent of 200,000 tons of 0.25 percent U–308 ore.

From this statement it can be seen that the Atomic Energy Commission indicated that there would be no limitation on production until after 1962, and that then the limitation would only be to 500 tons U–308 per year. However, today they have already limited many operations to less than that and if no more milling facilities are built, as a practical matter, production will be limited at this time as to many producers to less than what the AEC anticipated limiting it to in the future. In further quoting from this speech, Dr. Johnson stated as follows: "In arriving at its decision the Commission took into consideration the need for a firm price guaranty during a period when the Government still would be buying most of the uranium. There would be no effective free market. During this period those engaged in exploration and development must be assured that they would have a market for their uranium concentrates, or at least a market large enough to support a substantial operation."

In October 1954, Dr. Johnson, in speaking before the American Mining Congress as to the outlook for uranium mining, stated "Uranium production under the defense program can be profitable business. The growth of the mining and milling operations, and the private capital being invested in these operations are ample proof of that statement."

In an article entitled "There Is No Real Bottleneck," which appeared in the Engineering and Mining Journal in 1955, and which was written by Dr. Johnson, he wrote relating to the development of the Commission's ore buying program: "Consequently, the program is designed to encourage widespread prospecting and mining of small deposits. If we had the ore, wherever it might be found,

milling facilities could be provide, if they had to be supplied by the Government. Therefore, guaranteed minimum ore prices were established, together with haulage allowances, initial production bonuses and production incentives. *It has been the policy of the Commission to furnish a market for all ore delivered to buying stations* [italic added], subject only to the capacity of the facilities, and to set up local buying stations wherever warranted by the production potentialities of the new area."

Relating to Mr. Carroll L. Wilson's interview with Engineering and Mining Journal relating to the milling bottleneck, Dr. Johnson stated: "As Mr. Wilson points out, the Commission's ore buying schedule provides that no producer may deliver in excess of 1,000 in any year without a contract. This provision was not for the purpose of restricting production but to provide for orderly delivery schedules and planned production rates. There are no penalties for failure to delivery except cancellation of the contract. If the ore available for delivery in an area exceeds the capacity of the installed sampling facilities, deliveries must be limited until the facilities can be expanded. This the Commission has endeavored to do as soon as possible.

"Mr. Wilson suggests that the Commission might limit ore purchases to the 1,000-ton noncontract commitment in order 'to move private property owners into getting a partnership with a milling outfit, or with milling capital.' This would be *evasion*, under a *technicality*, of the *Commission's assurances to the miners*." [Italic added.]

Again, this statement recognizes that the Commission has assured miners that they would have an assured market as to quantity as well as to price schedule.

On October 12, 1955, Senator Clinton P. Anderson, chairman of the Joint Committee on Atomic Energy, in addressing the American Mining Congress at Las Vegas, Nev., stated "As you know, the Atomic Energy Commission has encouraged the guaranteed buying program. The termination date of that program has been progressively extended—first to 1954 and then to 1958. Today, it extends until 1962." He went on to say "The immediate future poses no great worries for uranium producers. The vast atomic plant expansion program authorized by the Congress in 1952 is not yet completed. For the time being, and for the years immediately ahead also, we will need all the uranium ore we can get if we are to meet the atomic weapons goals set forth by our defense planners.

"But now let's peer somewhat further into the future—say to 1965 or 1970. Competent students of military strategy argue that by 1965, to choose an arbitrary date, the nuclear-weapons stockpile of the United States will be large, efficient, and versatile enough to meet any possible military contingency."

Senator Anderson then went on to say that he did not agree with the 1965 deadline and gave assurances that there would be a substantial market for uranium beyond that date.

In February 1956, at the 59th Annual National Western Mining Conference in Denver, Colo., Dr. Johnson stated, in explaining why the Commission had not yet announced its policy as to what it would do after March 31, 1962: "Although we are no longer faced with the problem of finding enough uranium for the current defense program, it is important to develop reserves to assure a long-range continuing supply for the coming atomic-power industry and for possible military needs. This means that the uranium-mining industry should be maintained in a healthy condition. It is particularly important that domestic prospecting and exploration continue. These objectives can be accomplished only if there is a long-term market for uranium.

The AEC release, dated May 24, which announced that the guaranteed price on uranium would be extended by 5 years beyond March 31, 1962, to December 31, 1966, read in part: "The new domestic procurement program provides a guaranteed market for all uranium concentrates produced by domestic mills from domestic ores, subject to a limitation, at the Commission's option, of 500 tons of U–308 per year from any one mining property or mining operation and to compliance with Commission specifications. The price established is $8 per pound of U–308 contained in normal mill concentrates or precipitates.

"The action was taken in recognition of the need for a continuing Government market in order to maintain a high rate of exploration and development. Although domestic uranium production has shown a remarkable expansion, known ore reserves will be greatly depleted by 1962 unless extended by aggressive development and exploration. A high rate of discovery is essential if substantial production is to be maintained after that date. The new domestic uranium procurement program provides assurance of a Government market for

an additional period of almost 5 years beyond March 31, 1962. This assurance will assist uranium mining and milling firms in planning future operations." It further stated "The Commission, at its option, may limit the purchase of concentrates derived from any one mining property or mine operation to 500 tons of U–308 per year. Depending on requirements, additional quantities may be purchased. Such purchase of additional quantities may be at a price of $8."

In testimony before the Joint Committee on Atomic Energy, in February of 1956, Dr. Johnson stated "In the past we have attempted to obtain maximum production as rapidly as possible. By 1962 our objective may be to maintain production at some general level, rather than to expand it, and at the same time encourage prospecting and exploration so as to develop ore reserves to assure a continuing domestic uranium supply."

The uranium industry has operated at a decided disadvantage in that because of the necessary, and sometimes not so necessary, veil of secrecy which has cloaked the requirements for uranium, those in the industry have not been able to gage, as have other industries, what the demand for their product was and what they could expect it to be in the future. As a result, those in the industry have had to depend upon the assurances given them in remarks made by Atomic Energy Commission officials. Up to this time they have been led to believe that there would be an unqualified demand for all uranium they could produce up through 1962. And, based upon the marketing requirements after 1962, that they could expect to produce 500 tons of U–308 per year. Although they have recognized that the Commission's ore-buying schedule provided that no producer may deliver in excess of 1,000 tons in any year without a contract, the Commission's policy, as was expressly stated by Dr. Johnson in his articles in Engineering and Mining Journals, above referred to, has been this provision was not for the purpose of restricting ore production. And further, as Dr. Johnson stated: "This would be evasion under a technicality of the Commission's assurances to the miners." Now, the Commission has used this very technicality, which is an evasion, as Dr. Johnson called it, by providing that the Commission will let only a limited number of contracts and only to those who have already initiated negotiations with the Commission. Again and again the spokesmen of the Commission have stated that it is necessary to encourage further exploration and development. Even as late as Dr. Johnson's speech before the Atomic Industrial Forum on October 28, 1957, Dr. Johnson stated: "I believe that the uranium-production rates and schedules can be maintained for many years without resorting to the low-grade, high-cost sources. However, this will require a continuing major exploration effort. If the more optimistic estimates of uranium needed for power required by 1970 or 1975—from 50,000 to 100,000 tons of uranium per year—are to be met, an intensive worldwide search must be started well in advance."

The industry, in reliance upon the supposed Government market for uranium, has invested millions of dollars in exploration and development. If this exploration is to continue, the money which those in the industry have tied up in exploration and developing ore bodies, some of which under present milling facilities in their areas will not be recovered from between 10 and 20 years, must first be recovered with a slight profit margin before that money can be reinvested and further exploration carried forward.

CONCLUSIONS AND RECOMMENDATIONS

1. If it is necessary to restrict further expansion of uranium production, first restrictions should be imposed on other than domestic production in order that exploration for and development of domestic reserves can continue.

2. Definite official public statement of policy, rather than ambiguous remarks to private groups, should be made by AEC and in the event such policy is to curtail future expansion of production, sufficient time element should be given to allow producers who have relied on previous policy to prepare for survival as best they can when possible.

3. Even if future expansion is to be restricted, sufficient new mill contracts should be let to correct present inequities in area milling capacities based upon present reserves, and capital investments in those reserves, which have been made in reliance upon existing policy.

4. Make some provision aside from production to encourage exploration for new reserves. One example could be advancing partial payment against ore

in ground, in return for agreement to retain ore in ground for certain period of time. This program might be compared with the Government's present soil-conservation program now in effect.

5. Definite consideration of the inventory and timelag problem faced by the mining industry in that it is often 4 to 5 years from discovery until ore is mined; therefore, any change in policy should take into consideration the necessity of allowing the producer to liquidate a portion of an inventory which he built based on past AEC policy.

Chairman DURHAM. Can you give me some idea as to your membership in the association?

Mr. ORR. Yes, sir. My background is something of a legacy rather than formal training, my grandfather being one of the original vanadium producers and I growing up with it from the time I was a small boy.

Following my entry into the radio-journalist field, I covered the uranium developments from the outset.

In 1954 I became the editor of the Uranium Information Digest. At the time the digest ceased to exist due to lack of advertising revenues, I again went into the radio and journalism field where I am now, and still keeping a very close touch with the industry through my activity at UOPA, and also at the news level.

Chairman DURHAM. Thank you very much, Mr. Orr.

Mr. ORR. Thank you.

Chairman DURHAM. The next witness is Senator Allott.

Senator, we are very glad to have you with us this morning. We shall be happy to have you proceed at this time.

JOINT STATEMENT OF HON. GORDON ALLOTT, AND HON. JOHN A. CARROLL, UNITED STATES SENATORS FROM THE STATE OF COLORADO

Senator ALLOTT. Thank you, Mr. Chairman.

Before commencing this statement, I would like to say that my colleague from Colorado, Senator Carroll, has authorized me to say that he joins in my statement and this is to be considered as a joint statement of not only myself, but him.

Chairman DURHAM. Thank you very much.

Senator ALLOTT. Thank you for the opportunity to appear here today.

As the senior Senator from Colorado, I am vitally interested in the uranium industry in all its aspects, including exploration, development, production, and milling. It has become and is a vital economic factor in Colorado.

I have received definite written representations that there now exists a serious condition of hardship in the uranium industry along the Front Range of the Rocky Mountains. This condition is due in part to the fact that uranium producers are no longer getting adequate service from existing mills.

There have been new discoveries of ore deposits on the eastern slope. At the same time the mills to which ore has been shipped from the Front Range have had greater demands made on them from their own localities.

The result is that they are taking less ore from the Front Range. For this reason my constituents and I have a very strong feeling that a mill along the eastern slope would alleviate this hardship.

Several mills have been proposed in different locations, and with different capacities. The Cotter Co. would like a 200-ton mill at Canon City.

A mill near Walsenburg is proposed, and there are other suggestions.

I know that the Commission will weigh the testimony and evidence on these proposed mill sites, and it is up to the Commission, of course, to decide which application will be selected.

There are others here today to express their views on this situation. A number of people from Colorado who are directly concerned with the industry and with this problem have come here to discuss it with you. I know that you will give them all a careful hearing.

I am referring particularly to this Front Range problem.

I would particularly like to comment on the excellent statement of Mr. Gordon Weller, of the Uranium Institute of America, yesterday, and on Mr. Weller's proposal for an effective advisory council.

It seems to me imperative that the present inactive group be replaced with a council that will operate closely and effectively with the people in the industry.

The Government has a particular obligation to the uranium producers because of their unique position among our domestic industries. Advisory groups have been set up for other fields where a great deal more self-determination is possible.

The uranium industry is not able to investigate and develop its own markets, but is at present totally dependent on the Federal Government. The Government in its dependence on the industry has found the uranium producers willing to cooperate to the utmost.

There is certainly a corresponding moral obligation on the Government to cooperate in turn with the industry.

In the past this desired cooperation has been lacking, and I am very anxious that this situation be corrected.

I believe some of the Colorado witnesses will comment on the duty of the Commission to give the industry early enough notice on purchasing policy so that adjustments can be made without loss.

Considering the risk ordinarily involved in mining ventures, a sudden seemingly arbitrary action on the part of the Government can wreak havoc with the industry and with the economy of those areas dependent on uranium production.

My good friend, Bob Palmer, speaking for the Colorado Mining Association, will point up some of the specific problems involved.

In closing, I want to compliment the Raw Materials Divisions for their foresight in ordering a survey to appraise the hardship problem. This will be of assistance to all of us who are seeking means to overcome the current and potentially hazardous economic conditions facing the uranium miners.

I am sure that an answer can be found, and I shall be happy to work with all of you to find it.

Thank you, Mr. Chairman.

Chairman DURHAM. Thank you very much, Senator.

Mr. Robert Palmer is the next witness, I believe.

Come around, Mr. Palmer.

STATEMENT OF ROBERT S. PALMER, EXECUTIVE VICE PRESIDENT, COLORADO MINING ASSOCIATION

Mr. PALMER. First, Mr. Chairman, and members of the committee, on behalf of the uranium mining industry in the Rocky Mountain region, we want to thank the Joint Committee for the excellent job it has been doing and the many hours of attention you have been giving to our problems.

We would also like to express our sincere appreciation for the grand job being done by the Commission, and particularly by its able personnel and I would like to refer to Jesse Johnson in particular, whom we have known for a long time in the mining industry as one of the ablest servants in Government.

The complexity of uranium prospecting, exploration, development, and mining requires the talents and capabilities of a wide variety of people, both technically trained and otherwise, who have devoted the greater part of their lives during the past few years in searching out, exploring, developing and bringing into production comparatively isolated areas, experiencing almost unbelievable hardship in some instances, and in many great sacrifice.

The welfare of the Nation was at stake and the United States needed reserves of uranium in order to plot its course toward continued world leadership, safety and security.

Some skeptics, principally in technical branches of the State Department, were convinced that America was a "have-not" nation, uranium-wise, and some great financiers were pointing with scorn at the small pods and lenticular ore bodies being uncovered by the untiring and relentless prospectors.

Many were inspired to make their country a "have" nation, uranium-wise, working under a well conceived and carefully worked out program of the Atomic Energy Commission. This program assured stability to an industry which was new and untried. It gave to the miner an assured market for all uranium ores produced under the AEC domestic buying program until March 31, 1962.

Thousands of additional Americans supported this program by investing their savings in exploration and development activity in proportions never before seen in the history of the country. On May 24, 1956, the Commission announced that the guaranteed price on uranium would be extended by 5 years beyond March 31, 1962, to December 31, 1966.

The new domestic procurement program provided a guaranteed market price for all domestic production of concentrates from domestic mills for domestic ores, subject to a limitation at the Commission's option of 500 tons of uranium oxide per year from any one mining property or mining operation provided it complied with the Commission's specifications.

It was apparent to the Nation and certainly to the mining industry that the later action was taken in recognition of the need for a continuing Government market in order to maintain a high rate of exploration and development, and assure the uranium miner of a continued outlet for his ore.

It was also apparent that at the time the announcement was made known, ore reserves would be greatly depleted by 1962 unless the

program were extended and the industry encouraged to continue aggressive development and exploration.

While heavy contributions were made by major operators in this all-out effort to make America safe and secure, by and large the major contributions were made by the small prospectors and operators—those fellows whose survival must be maintained as a sound Government policy lest Uncle Sam lose his world leadership for want of a sound uranium mineral policy.

Many of the larger milling operations, in which thousands of stockholders have invested their moneys, are largely dependent on a constant supply of ore from small mining operations. Small shippers are, in many instances, falling by the wayside even under present existing governmental programs. In urging the Congress to authorize the Commission to reaffirm and clarify its current policies and practices with relation to the uranium mining and milling industry, it is the hope of our association that not only up to but also subsequent to March 31, 1962, the present incentives to the smaller operators will be continued, if not augmented.

It is further our recommendation that the proper committees of Congress continue the defense minerals exploration program in the national interest. It is quite apparent to those of us who represent the uranium industry that a reaffirmation of Commission policies is desirable at this time, for some confusion exists in the minds of many of those engaged in uranium mining and milling in the United States today as to just what is in store for us.

Apparently the Atomic Energy Commission's monopolistic procurement practices will eventually come to an end and, as recently announced, private commercial markets if not foreign markets will be opened to American uranium producers.

Estimates as to the time this transition period may take place vary. But, in any event, recognized authorities in science, engineering, finance, and Government recently at our national western conference in Denver reassured the uranium industry that its product, namely uranium, was vital and essential to the future welfare, safety, and security of the United States; that in fact worldwide requirements would increase with time, and that any nation which desired to keep step with progress must of necessity rely on atomic energy from the source material known and recognized as uranium.

If industry is to spend millions, yes billions of dollars in the development of the end use of this product, if the taxpayers of the United States are to expend millions, yes billions of dollars in research and experimentation to the end that civilization will grow and prosper through the use of this product, then certainly it is within the realm of sound national policy to take into consideration the needs and requirements of those who search out, explore, develop, and produce this source material under the American flag.

We have only the highest commendation for the Atomic Energy Commission for making its foreign commitments. We recognize that these are, for the most part, binding contracts which are in some instances being modified by the release of some of the material to foreign friends.

The mining industry recognizes full well the numerous advantages to be achieved from long-term contracts. In fact, the mining industry

has advocated this practice for decades. But the mining industry has also witnessed too often the sacrificing of domestic progress within the mining industry for foreign commitments.

It is respectfully suggested that if it comes within the national interest to curtail the production of uranium, that the curtailment not be restricted to domestic production but include foreign production and commitments as well.

Our interest centers in Colorado but, by reason of our extensive membership, extends throughout the Rocky Mountain region. The position of our membership has been fully set forth in resolutions adopted at our recent conference, copies of which are attached to this statement.

Chairman DURHAM. Without objection they may be included in the record.

(The material referred to is as follows:)

THE WESTERN MINING CONFERENCE AND THE COLORADO MINING ASSOCIATION

RESOLUTIONS ADOPTED AT DENVER, COLO., FEBRUARY 8, 1958

Of basic things

The maintenance of freedom depends upon honest commitments faithfully kept. This is true between government and its people as it is between private persons. It is no less important domestically than internationally. Government commitments should be kept no less than private covenants, and breach of faith and of contract between a government and its people have no place in this country.

Uranium

We commend the Atomic Energy Commission for its tremendous job in providing scientific know-how for private industry to advance research and development of the nuclear reactor program and more extensive projects for the use of nuclear energy in the advancement and betterment of mankind.

The mining industry has consistently urged that any and all programs launched by the Federal Government for a sound mineral industry be based on the national interest, well-being of our people and safety and security of the country. We have never advocated boondoggling programs to enrich comparative newcomers to our field. In line with this program we have consistently advocated public pronouncements by Government supplying the mining industry with the truth, uncolored by political expediency or palaver.

The Atomic Energy Commission launched a program to encourage exploration, development and production of uranium within the United States. This program was one of the most commendable ever to come out of Washington. Its results speak for themselves. The United States is capable of meeting its uranium requirements for many generations. Guaranties were made and kept, and when production seemed sufficient for military requirements of the Nation, Federal executive agencies controlling expenditures placed limitations on these. It became apparent that the Atomic Energy Commission could not be expected to purchase infinite quantities of uranium above military needs. With this limitation upon them, how else could they otherwise properly limit production than by the device publicly announced, in view of commitments made prior to the development of new fiscal policies?

It has been the experience of the mining industry that curtailment of production is always directed at the domestic rather than the foreign producer. Witness the firm contracts for tungsten outside our borders, and the drastic action taken against domestic producers. Surely the mining industry is justified in recommending to the Commission that its recently announced curtailment program be not restricted to American production but that foreign contracts be modified also.

There are economic ore bodies in the United States at great distance from mills and without adequate milling facilities, which ore bodies were developed in reliance on AEC programs, and are certainly entitled to their share of the domestic market. The domestic producer of uranium is entitled to facilities to enable him to market it as any foreigner, and the uranium industry submits it is entitled to fair treatment with regard to these mine products.

We recommend that the Atomic Energy Commission purchase domestic ores and concentrates, whenever available, to keep an active, going, healthy uranium industry within the United States and not enlarge its purchases from foreign sources. We believe the maintenance of an active, going domestic uranium industry is in the national interest regardless of the stockpile and that future national requirements should be taken into account with emphasis on buying domestic production as a national policy.

We contend the ultimate solution of the marketing problem for uranium mines and mills is a commercial one eventually to be maintained on a long-term basis. It may be this market will not be restricted to America but may be extended to Europe, the British Isles, Japan, and other nations where costs of atomic power are rapidly approaching a competitive stage.

We contend the American miner is entitled to a competitive market, but as with gold, the sale of uranium is being restricted by our Government to foreign countries, and producers outside our country have an advantage over us in building up these markets.

We urge the Atomic Energy Commission at the earliest possible time to remove this restriction on sale to foreign countries and suggest that appropriate procedures permit the American mine and mill to compete in those markets. We believe if this is done we can compete with foreigners because of the nature of our ore bodies. In the event AEC policies permit the industry to compete for foreign markets, it is apparent that at the end of 1966 we should be able to supply and maintain a substantial outlet for our production. On the other hand, although news of scientific developments and cost-cutting procedures is encouraging, we believe if we are barred from the foreign market and are compelled to wait for nuclear power development in our own country, we are headed for trouble because of a substantial gap between the AEC program and the ultimate development of commercial markets for domestic production.

We believe that there is a responsibility on the Atomic Energy Commission and the Federal Government to provide reasonable and adequate plans for transition to the period when peacetime and industrial requirements for uranium will dominate. We still urge this responsibility on the Atomic Energy Commission and on the Government.

We commend the Atomic Energy Commission for its cooperation and efforts to keep our industry iformed as to policy. We are grateful for its release of information to the industry at the National Western Mining Conference sponsored by the Colorado Mining Association, as demonstrative of its forthrightness and integrity.

Mr. PALMER. As more fully brought out in our declaration of policy, we believe that the mining industry must of necessity insist on honest, fair dealing, and promises kept in all negotiations, transactions, contracts, and commitments with the Federal Government. We do not think it would be in the national interest for any other policy, program, or standard to be adopted. The domestic producer of uranium is as much entitled to facilities and incentives which will enable him to market his ore as anyone outside the United States, and fair treatment must be insisted upon and confidence restored to an industry of major importance to the welfare of the United States and its people.

We recommend that the Atomic Energy Commission purchase domestic ores and concentrates whenever available to keep an active, going, healthy uranium industry within the United States.

We believe the maintenance of an active, going uranium industry is in the national interest regardless of the size of the stockpile, and we think that in estimating our national requirements we should rely in full measure and with proper emphasis upon domestic production.

As stated at our recent conference by Paul F. Genachte, director of the atomic energy division of the Chase Manhattan Bank:

We do not really believe there is any reason for concern for the uranium industry. The principal object of the Atomic Energy Commission's procurement policy guaranteeing a market to domestic producers until 1966 is indeed to stimulate exploration for new ore reserves.

On the other hand, when atomic energy becomes competitive in the United States, and its use increases as the technology improves throughout the free world, a time will be reached, probably around 1965, when there will be a marked snowballing effect in the consumption of uranium. And since it takes years to discover uranium ore bodies and to build mills, it is imperative that all the mills—which have been contracted for—continue to operate under profitable conditions after 1962.

It is too early to know with certainty what the various governments may do at the expiration of the present contracts. Indications are that these governments will have to stockpile uranium for a few years until such time as the demand catches up with production.

There will undoubtedly be a transition from a government-controlled to a commercial uranium market. While it is no longer in the interest of our Government to expand production as compared with Canada and South Africa, it is advisable that we continue to pursue a dynamic ore exploration program.

We believe further that if it is in the national interest, and particularly if American industry is to enter the export trade for reactors, then and in that instance licenses be granted to American producers for foreign export and sale of domestically poduced uranium and uranium products.

We believe further that it is not in the national interest to reduce or terminate present incentives extended to the uranium industry, and particularly to the smaller segment thereof, for the reason that those familiar with mining practices fully realize that when incentives are decreased it becomes necessary in mining ore bodies to gut the mines or mine the richer portions of the ore body in an effort to meet expenses, or to high-grade and use selective mining practices which are contrary to conservation policies. It is in the national interest to conserve—that is, to engage in wise use of our mineral resources—and in carrying out this policy the industry requires and should receive proper incentives.

It should be kept in mind that it takes many years of effort to bring into production a mining operation, and that any sound mineral policy should be planned on a long-term basis.

Chairman DURHAM. Thank you very much for coming before us, Mr. Palmer.

The next witness is Mr. David Marcott or Mr. Parker Wilson of the Cotter Corp.

STATEMENT OF PARKER WILSON, PRESIDENT, COTTER CORP., STATE OF NEW MEXICO

Mr. WILSON. Mr. Chairman, my name is Parker Wilson. I am president of the Cotter Corp. Mr. Marcott is here and can be questioned if you like, but the statement will be mine.

Chairman DURHAM. All right, we are glad to have you. You may proceed.

Mr. WILSON. Before I commence the written statement, Mr. Chairman, I would like to point out that you have heard a great many hardship cases. All these people are in trouble. We are not an exception.

We find ourselves in a difficult spot, too, but in addition, the Cotter Corp. has a contract with the Commission under which we have performed.

I will read some of the principal elements in the contract as we go along.

My name is Parker Wilson. I am president of the Cotter Corp., a small independent company organized just a few years ago in the State of New Mexico. There are only three stockholders.

Cotter's concern for some time has been the development of eastern slope uranium ores. It soon became acutely aware of the need to solve the difficult metallurgical problems of the ores in that area, and of the need for processing facilities.

Cotter presently holds a contract from the Atomic Energy Commission for the construction of a pilot plant processing such ores.

The committee is, I know, rushed, and, accordingly, I am going to touch only upon what seem to be the highlights of this situation.

The facts involved are somewhat complex.

I have a statement available that is not attached to this report, but will be made available to the members of this committee, with your consent.

Chairman DURHAM. Without objection, it will be included in the record.

Mr. WILSON. Thank you.

(The material referred to follows:)

COTTER CORP. ACTIVITIES TOWARD CONSTRUCTION OF A URANIUM MILL

STATEMENT OF FACTS

Nature of Cotter Corp.

Cotter Corp. is a small, independent company, organized under the laws of the State of New Mexico. It has been in existence a relatively short period of time. It has three stockholders, the Wilson Oil Co., Malco Refineries, Inc., and David P. Marcott.

The Wilson Oil Co. and Malco Refineries, Inc. are well known and reputable independent petroleum operators. Mr. Marcott, who is vice president and general manager of Cotter Corp., was formerly associated with the University of California at Los Alamos, N. Mex., as a research chemist.

Cotter Corp. has offices at Post Office Box 627, Santa Fe, N. Mex., and in the First National Bank Building, Post Office Box 751, Canon City, Colo. All of Cotter Corp's. operations have been in Colorado.

The corporation was originally organized for the purpose of acquiring and developing thorium bearing deposits tributary to a mill located near Canon City, Colo. In connection with this objective, Cotter became interested in the possibility of milling uranium. Various difficulties beset Cotter Corp. in the advancement of its thorium activities and, while not abandoning these interests as an ultimate objective, Cotter undertook extensive work with respect to possibilities of milling uranium ore located in the Front Range, eastern slope area, of Colorado. Cotter was the first and only organization to recognize the opportunities afforded by the development of a successful process for treating these ores. These ores themselves, while of extremely high grade, are also extremely difficult to process economically.

As Cotter investigated into the situation in cooperation with the Atomic Energy Commission, it reached the conclusion that a successful metallurgical process could be developed and that an appropriate approach to the situation was the construction of a pilot plant for the development and proving of such a process, thereby opening up this geological province to production through the ultimate erection of a mill of substantial production capacity. This approach to the problem of exploiting Front Range ores was in full harmony with the views of the Atomic Energy Commission as expressed to Cotter by the Grand Junction Operations Office.

The pilot plant contract

After considerable discussion between Cotter Corp. and the Atomic Energy Commission a contract envisaging the development of eastern slope ores was entered into on May 23, 1957, between AEC and Cotter, having the following stated objectives:

(*a*) Research into improved metallurgy,

(*b*) Increasing domestic production of source materials by providing a market,

(*c*) Development of additional ore reserves to support a plant of substantial production capacity; and

(*d*) Construction of a pilot plant for such purposes.

In September 1956 Cotter Corp. had entered into an agreement with the Colorado School of Mines Research Foundation for research envisioning the development of a process by which Front Range ores could adequately be treated. This research program was a continuous effort and, after execution of the pilot plant contract in May 1957, was carried forward even more vigorously.

In March 1957 Associated Engineers, Inc, of Denver, Colo., had been engaged by Cotter to prepare preliminary flowsheets including the sizes and prices of equipment for the purpose of estimating the capital costs of the pilot plant referred to in the contract. After the contract was entered into, Western Knapp Engineering Co. of San Francisco, Calif. continued the design and engineering work begun by Associated Engineers and by late September 1957 the flowsheet for the pilot plant mill was frozen and a complete engineering study of capital costs had been presented by Western Knapp Engineering.

Immediately after the signing of the contract, Cotter Corp. also undertook to secure from mine operators rights to various eastern slope ores which would assure the "additional ore reserves adequate to support a plant having substantial production capacity." Cotter itself acquired certain properties in the area and obtained commitments to ore reserves from other groups in the area which had been experiencing difficulty in marketing ores simply because of the unique primary mineralogy of these ores.

By later September of 1957, after the expenditure of considerable money and effort, Cotter Corp. and the Colorado School of Mines Research Foundation were successful in developing a process for treatment of a majority of the Front Range ores on an economic basis. The success of Cotter's efforts was greater than originally anticipated and sufficient ore reserves had been developed to support a sufficently large plant that it seemed unnecessary to go through the pilot-plant stage in order to fulfill the objectives of Cotter Corp. and the AEC.

October 1957 AEC meeting

At about this same time, the end of September 1957, recoveries on Denver-Golden ore became erratic due to a change in the mineralogy of the ore. This fact, coupled with the developments achieved during the summer months after the signing of the contract in May, led to a meeting in early October 1957 at Grand Junction between AEC representatives and the representatives of Cotter.

In the course of the conversation, Mr. Allan Jones, of the Grand Junction office, when told of the erratic recoveries on the Denver-Golden ore, informed Cotter that as Cotter had no immediate contractual obligations, any delay caused by further research would not jeopardize the pilot mill contract. During this same conversation, the relative costs of mill construction were discussed and Mr. Jones was informed that the cost estimates for the construction of the pilot plant were running in excess of $1 million and that a plant of that size would be difficult to amortize in 2 years.

Several other matters were discussed in the course of the October meeting, including extension of the terms of the pilot plant contract and the payment of the initial production bonus outlined in Atomic Energy Commission schedule No. 6. In connection with the latter discussion, Mr. Wilson, president of Cotter Corp., explained to Mr. Jones and the other AEC representatives that failure to authorize such payment would constitute a serious problem and could conceivably shut off production from small, independent producers who were depending on the initial production bonus as their only possible profit.

It was suggested that the solution to the problems outlined in the discussion might be the construction then, without going through the pilot plant phase, of a mill having substantial production capacity as ultimately contemplated in the pilot plant contract. Mr. Jones agreed to this and suggested that, while small mills were no longer economical in most areas, because of the high-grade ores available in the Front Range, the high operating costs per ton of ore treated could be offset by an increase in the average grade of ore milled and an acceptable product price was very possible. Mr. Jones then requested that Cotter prepare a formal proposal for a mill having a production capacity of 200 tons per day. This seemed a sound solution to all problems and fully warranted by the development by Cotter of a sound and workable process and the assurance of adequate reserves to support a mill operation of the size contemplated.

Cotter's larger mill proposal and intervening developments.

By early December a proposal for a 200-ton-per-day mill had been developed and a further conference with the Commission in early December on the basis of the outlined form of this proposal was held.

In the meantime, in a speech on October 28 delivered by Mr. Jesse C. Johnson, Director of Raw Material Division of the AEC, although still acknowledging the necessity of providing markets and further developing domestic supplies of uranium, also indicated that new milling authorizations would not be granted. The result was that when Cotter presented its outlined proposal, the Commission attitude seemed at best lukewarm, and at the same time, to Cotter's surprise, the Commission representatives questioned the continuing validity of the pilot plant contract itself. Cotter, nevertheless, felt that its obligation was such that it should carry through with the proposal preparation of which commenced as a result of the October 5 meeting; and on January 13 of this year Cotter formally presented to representatives of the Commission at Grand Junction the detailed statement of its plan for a 200-ton-per-day mill.

At the time of this formal presentation, Cotter was informed by Mr. Allan Jones, of the Grand Junction Operations Office that the Commission could take no action upon the proposal at that time and that any decisions with respect to the authorization of an enlarged mill would have to be made by the Commission in Washington. Mr. Jones also took exception to page 1 of the proposal, denying that a request for submission of a proposal had been made by the Grand Junction office, and indicated that Cotter's proposal for the 200-ton-per-day mill would have to be considered as a new proposal under AEC's program.

Mr. Jones further expressed the view that there was nothing in the pilot plant contract which could lead Cotter to believe that it would be given any preference in connection with the construction of a larger mill. His expressed feelings seemed to be that there was no connection between the pilot plant contract and the proposal for a larger mill, despite the conversations with Cotter antecedent to the issuance of the contract and the clear-cut representation contained in the contract that a basic objective of the contract was the development of additional ore reserves to support a plan of substantial production capacity.

Certain technical objections were raised by Mr. Jones in the January 13 meeting; principally, that Cotter's concept of available reserves of Front Range ore was considerably higher than that held by the Commission and that the projected production costs per ton of ore milled were higher than any other comparable costs in the country. Recent interest by other organizations in construction of a Front Range mill of a size even larger than that proposed by Cotter, indicates without more the validity of Cotter's estimates of reserves; figures subsequently made public by the Commission show that Cotter's projected production costs, expressed as costs per pound of recovered uranium oxide, are much lower than higher than the costs of other milling operations.

Mr. Jones did, however, assure Cotter that the proposal would be examined, and it was understood that because of the freeze on new contracts no action with respect to a new contract could in the Commission view be undertaken at that time.

Mr. Jones' comments with respect to the 200-ton-per-day-mill proposal being considered a new proposal and thereby not open for consideration apparently derived directly from the policy statements on behalf of the Commission in Mr. Johnson's speech of October 28. However, specifically what Mr. Johnson said on this point is:

"With respect to new proposals between now and 1962 for additional mill construction or mill expansion, the objective of the Commission will be to limit production to the approximate level which will be reached as a result of existing commitments. If new contracts are considered, preference will be given to providing a limited market for areas having no present milling facilities."

Even if Cotter's proposal were to be taken as a "new proposal," it would seem to be entitled to preference as related to an area "having no present milling facilities."

Cotter Corp. views on the 200-ton mill

The Cotter Corp. position taken in the meetings with Mr. Jones and in subsequent meetings with Mr. Johnson in Washington has at all times been consistent with Cotter's interpretation of the contract; namely, that one of the cardinal purposes of the contract was the development of a process which would support a production mill adequate to meet the needs for uranium-ore processing in the Front Range area. This was an original objective in seeking to verify

the process by a pilot plant, and was known to the Commission from the outset of the discussions leading to the pilot-plant contract.

Cotter further believed, and continues to believe, that, within the framework of the policy announced by Mr. Johnson and relied upon by Mr. Jones, favorable recognition of efforts such as those made by Cotter was actually intended and that the interpretation given by Mr. Jones to Mr. Johnson's remarks was in error. Cotter points out, in further support of its view, that Mr. Johnson also stated, with respect to proposals such as Cotter's, which actually had been made known to the Commission and had been a point of discussion with Commission representatives prior to October 28, that:

"Proposals for domestic contracts which already have been submitted and are under review still will be considered in the light of the discussions which have taken place. In some instances, these discussions were initiated a year or more ago."

Since the meeting in Grand Junction in January, Cotter has made two trips to Washington. The first of these trips was to distinguish clearly before the Commission the nature of Cotter's contract and current proposal for a 200-ton mill for the production of uranium oxide. There had been earlier discussions with the Commission concerning thorium production, which, as has been pointed out, was a project set aside in favor of the uranium deevlopment, but which, erroneously, was, in the minds of some representatives of the Commission, apparently still thought to be active. At this same time, Cotter met with Mr. Johnson to emphasize the existence of its contract and the interpretation which Cotter placed upon it.

Cotter's second trip to Washington has been for the purpose of presenting testimony to the Joint Congressional Committee on Atomic Energy and, further, for the purpose, through discussions with the Commissiono, of establishing clearly the validity of Cotter's present contract and agreeing upon a course of action reasonable in the circumstances.

Recent developments

During the past 2 months, Cotter has been made increasingly aware, through rumors in the trade, from information supplied by reputable individuals, and, finally, by direct contact, of the existence of proposals other than Cotter's for the processing of Front Range ores. According to these sources, Commission representatives have actually been discussing these proposals. No direct allusion to this fact or any discussions between the Atomic Energy Commission and such other parties has ever been made known to Cotter by Atomic Energy Commission officials, however, who steadfastly have maintained that under the existing policy of the Commission no discussions for the construction of a new or enlarged facility utilizing Front Range ores could now go forward. Cotter has been at a loss to understand these apparently irreconcilable positions.

Cotter's situation has become critically desperate during the past 2 months. Cotter had, through its own research and through affiliation with the Colorado School of Mines Research Foundation, proven a process by which Front Range ores could be economically processed, and had developed its ore reserves to sustain a mill of substantial production capacity. Cotter was of the belief in October that it had fulfilled sufficient of the conditions of its contract to warrant construction of the production facility envisaged in the contract. With the failure of the Commission to authorize construction of the 200-ton-per-day mill, Cotter found itself in the position of having to proceed forward with pilot-plant construction or abandon the entire venture with all of the losses in time, money, and effort attendant upon the work which it had performed.

Cotter's contract, calling for the construction of the pilot plant of 50-ton capacity, contemplated a contract life of 2 years for this size mill operation if, at least 6 months prior to November 15, 1958, the pilot-plant mill was in production. Construction of a 50-ton mill would require from 60 to 90 days and, of course, this has meant that the authorization to undertake construction, unless the pilot-plant contract could be extended, would have to be given by the beginning of the last week in February, at the latest. The continuing uncertainties of the situation with no evidence of a disposition on the part of the Commission to recognize Cotter's efforts, have forced Cotter to authorize construction of the pilot-plant mill, and this is currently going forward.

Yesterday, February 24, as a result of a series of discussions with the Commission, Cotter was informed that a 3-month extension of its existing pilot-plant contract would be granted. This extension, the Commission has told Cotter, will be an extension of time without alteration of the legal rights of the parties to

the contract. Cotter, however, has had no written confirmation of this information and, accordingly, is proceeding forward with construction at the present time.

There are five further, recent developments which deserve mention:

First, in the discussions of Friday, February 21, with Mr. Johnson of the Commission, Mr. Johnson commented that it was a shame to construct a pilot mill when what would be needed would be a production facility. This has been Cotter's view since its discussion with the Commission in early October of 1957.

Second, even though Mr. Johnson volunteered this comment, he did not propose at this time discussions looking toward an enlargement of the existing contract to carry out authorization for the larger production facility.

Third, Mr. Johnson gave Cotter to understand that the period of extension of the contract would be 6 months, without alteration of the rights of the parties, not 3 months as, subsequently, Cotter was informed would be the case.

Fourth, Cotter was informed by Mr. Jones in a discussion in the Grand Junction Operations Office on February 13 that Cotter's process, developed and paid for by Cotter without direct or indirect governmental assistance and made available to the Commission on a confidential basis, would be tested by the Bureau of Mines pilot plant at Salt Lake City, as a result of which the process would become public.

Fifth, Cotter was further informed at the meeting of February 13 that the Commission expected to receive other proposals for a Front Range production mill and that, despite Cotter's contract and the public disclosure contained in it of Cotter's price, that proposal would be selected on the basis of what at the time of selection was considered the best proposal; Cotter was further informed that its successful efforts to develop ore reserves to support a production facility were no longer of importance since existing reserves would inevitably gravitate to any production mill in the area regardless of whether or not presently committed to Cotter.

CONCLUSIONS

(1) The position of the Commission as it has developed over the past several months leaves Cotter no choice but to proceed forward with construction of a pilot-plant mill pursuant to its contract until a formal time extension is granted.

(2) This not the desirable course of action in the interests of Cotter, the eastern slope miners or the overall program, as has been pointed out by Cotter for a number of months, and as the Commission has itself apparently recognized.

(3) No recognition of Cotter's efforts in fulfillment of its contractual obligations has been accorded Cotter by the Commission; and the major contributions of Cotter to making possible a Front Range production facility:

(*a*) Development of a process for treating the eastern slope ores on an economic basis; and

(*b*) Development of available reserves to support a production mill,

are either going to be made public without Cotter's permission or are going to be disregarded in evaluating Cotter's fulfillment of its contract commitments and the attendant contractual obligation undertaken by the Commission of permitting Cotter to construct the production facility toward which Cotter's efforts at Cotter's expense have been directed.

Mr. WILSON. This will outline the significant points for committee reference.

Cotter has three primary concerns which it wishes to call to the attention of the committee:

First, there is, and has been for several years, a real, genuine, and abiding need for milling facilities for uranium ores which occur on the eastern slope of Colorado;

Second, by virtue of the work that Cotter has undertaken, its present contract with the Atomic Energy Commission, and the circumstances under which the contract was entered into, Cotter is in the best position to build the type of facility to meet that need.

Third, Cotter sees no reason why Cotter's work undertaken pursuant to its contract with the Commission, and already well advanced, should be interrupted by a change of Commission policy.

We agree with the opinion expressed by Mr. Jesse Johnson, Director of the Division of Raw Materials, of the United States Atomic Energy Commission, in his policy address of October 28, 1957, that we cannot maintain our country's uranium ore reserve position:

* * * without aggressive exploration and development.

It is well known that the eastern slope ores are among the highest grade in the Nation. They also have proved to be among the most difficult to treat.

A considerable amount of money has been spent by Cotter Corp. to develop methods for treatment. Cotter can now point to the fact that such methods have been developed and are in existence.

For a long period of time the eastern slope ores have had only a limited market. Necessarily, the existence of a limited market has also meant that the incentives to discovering and developing new ore bodies in this area have been reduced.

If a program is to be developed for providing adequate incentives to miners to develop new ore bodies to meet the future demands for atomic energy, then an adequate market, returning an adequate reward, must also be provided.

Now, with respect to point 2. There must be developed in the area of the eastern slope a mill of adequate productive size to assure a market for eastern slope ores. Obviously, such a mill could not have been put into being until after adequate metallurgical investigation had taken place to ascertain that an economic treating process could be established for such ores. This was exactly what Cotter Corp. understood, and precisely what Cotter Corp. did under our contract, and what has been successfully accomplished by Cotter Corp. over the past year.

I do not need to point out to the committee that at the present time the market for uranium oxide is a market provided by the Atomic Energy Commission.

Accordingly, the establishment of a mill of adequate size must be with the approval of the Atomic Energy Commission, and it is directly at this point that a difference has seemed to exist between the policy of the Commission and the application of that policy to the eastern slope ores.

In furtherance of Cotter's understanding of the economics of the eastern slope and the opportunities that could be provided, Cotter undertook in association with the Colorado School of Mines Research Foundation a research program to test the amenability of various ores in that area.

Cotter also undertook a series of discussions with the Atomic Energy Commission as to the construction of a mill further to develop the technology, and in May of last year entered into a contract agreement with the Atomic Energy Commission with respect to the construction of such a mill.

It was obvious from the course of these discussions that both the Commission and Cotter understood the necessity of developing adequate research so that a mill of "substantial production capacity" could ultimately be constructed when the metallurgical difficulties could be overcome.

In this connection, Cotter specifically calls attention to the recitations of its contract with the Atomic Energy Commission which, in

language provided by the Commission, established as objectives of the contract:

1. Research to improve metallurgical methods;
2. An increase in domestic production of source materials by providing a market therefor; and
3. The development of additional ore reserves to support a plant of substantial production capacity.

In furtherance of Cotter's belief, in this area and in collaboration with the Colorado School of Mines Research Foundation, we developed a process at our own expense after 14 months of intensive work for the treatment of eastern slope ores which would assure the economic operation of a plant having substantial production capacity. Cotter has thereby fulfilled the first objective indicated above.

In addition, at further substantial expense, both on our part and on the part of others, there have been developed additional reserves of eastern slope ores sufficient to support a mill of substantial production capacity. By this means Cotter has thereby fulfilled still another objective set forth in its contract.

After the fulfillment of these contract objectives, it became obvious that a mill of substantial productive capacity was required and feasible. At this juncture Cotter undertook preparation and submission of a formal proposal for the construction of a 200-ton per day mill.

The conference which led to this undertaking and submission was held with representatives of the Atomic Energy Commission in Grand Junction on October 5 of last year.

At the time of Mr. Johnson's policy statement of October 28, delivered in New York, technical representatives and engineers engaged by Cotter in the preparation of its 200-ton per day mill proposal were well advanced in their work.

It was after this speech that difficulties began to emerge, with the Commission taking the general view, as Cotter understands it, that no large mills could currently be authorized and that Cotter's efforts in developing the technology under the existing contract gave it no status for obtaining a larger mill, even though this was the stated purpose of the contract which was entered into.

The number of conferences with AEC representatives since October has been extensive. Cotter submitted its proposal for construction of a mill of 200-ton per day capacity, referred to above, only to find that the Commission's viewpoint changed to one that such a mill cannot now even be considered.

As has been pointed out, Cotter has invested substantial time, money, and effort in the development of the technology requisite for extracting uranium oxide on an economic basis from eastern slope ores. It can recover its investments only if it constructs a mill.

It is presently in the anomalous position that it cannot construct the larger mill toward which its and the Commission's efforts were originally directed.

For the past several weeks, Cotter has attempted increasingly to emphasize this dilemma to Commission officials both in Grand Junction and in Washington, and in its own defense has had to authorize commencement of the construction of the pilot-plant mill. Such a pilot-plant mill can only provide a market for a small percentage of the ore available in the area from an estimated 20 potential producers who presently have no market.

Despite this anomalous situation Cotter has commenced construction of the pilot-plant mill contemplated in the existing contract. Its smaller capacity will at least afford a limited market for a few of the properties having ore of unusual grade and will keep them from becoming derelict.

This, Cotter points out, however, is no answer to the problem. Upon completion of the pilot plant recently commenced, Cotter will have fulfilled all of its obligations under the contract.

It appears to us, however, that the ultimate objectives of the contract, a mill having substantial production capacity, have been placed in jeopardy by the interpretation which the Commission currently is placing upon the policy announcement made by Mr. Johnson on October 28. We do not, and cannot, understand how the contractual obligations of our contract can be altered by such an announced change in policy.

Cotter feels strongly that the problems in Colorado can only be adequately dealt with if there is action now by the Commission authorizing construction of the type of production facility proposed by Cotter in furtherance of its existing contract. It believes that only by such a facility can the needs of the miners in that area be adequately met.

It points out that the continued uncertainties of Commission policy have placed Cotter in an extremely awkward position and do irreparable injury to independent operators seeking to establish a competitive milling industry.

Cotter sincerely hopes that, as a result of these hearings, policy determinations can be agreed upon which in future will avoid the type of difficulties in which Cotter has found itself, and which drastically retard rather than advance the objectives of the overall program.

Cotter must go forward. It will continue to rely upon and act under its existing contract and upon the 3-month extension of time, which, incidentally, was granted to us over the weekend, without alteration in the rights of the parties, which the Commission has stated it will grant.

It must hope that the Commission will steadfastly observe its commitments and will continue to recognize the basic reasons for establishing the contract in the first place.

Thank you.

Chairman DURHAM. When was your contract signed, Mr. Wilson?

Mr. WILSON. In May of 1957.

Chairman DURHAM. That is a signed contract; is it?

Mr. WILSON. Yes, sir; I have it right here.

Chairman DURHAM. Between you and the Commission?

Mr. WILSON. Yes, sir.

Chairman DURHAM. Can you supply a copy of that for the record?

Mr. WILSON. Yes, sir.

Chairman DURHAM. Without objection, then, that may be placed in the record.

Mr. WILSON. Yes, sir.

(The material referred to follows:)

CONTRACT No. AT(05-1)-735

(This Document Consists of 21 Pages. No. 16 of 17 Copies, Series A.)

Contractor: Cotter Corporation, Santa Fe, New Mexico.
Payment to be made by: Regional Disbursing Officer, United States Treasury Department, Denver, Colorado.
Submit Invoices to: U. S. Atomic Energy Commission, Grand Junction Operations Office, Grand Junction, Colorado.

This Contract, entered into and effective this 23rd day of May 1957, by and between the United States of America (hereinafter called the "Government"), represented by the United States Atomic Energy Commission (hereinafter called the "Commission"), and the Cotter Corporation (No Stockholders' Liability), a corporation organized and existing under the laws of the State of New Mexico, with offices at Santa Fe, New Mexico (hereinafter called the "Contractor");

Witnesseth that:

Whereas the Commission (1) recognizes the need for research to improve metallurgy methods for the recovery of uranium concentrates, (2) desires to increase the domestic production of source material by providing a limited market for uranium-bearing ores produced on the eastern slope of Colorado, and (3) contemplates affording an opportunity for development of additional ore reserves adequate to support a plant having substantial production capacity; and

Whereas the Contractor desires to construct and operate in the vicinity of Canon City, Colorado, a pilot plant and related facilities (hereinafter called the "pilot plant,") having a daily capacity of approximately fifty (50) tons of uranium-bearing ore for the production of uranium concentrate from ore to be produced in the Canon City or Front Range or eastern slope areas of Colorado, to treat such ore and sell uranium concentrate produced, to the Commission; and

Whereas this contract is authorized by and executed under the Atomic Energy Act of 1954, in the interest of the common defense and security;

Now, therefore, the parties hereto do agree as follows:

ARTICLE I—SCOPE AND TERM OF CONTRACT

1. The Contractor agrees to construct, as promptly as possible, a pilot plant having a capacity to process approximately fifty (50) tons of uranium-bearing ore daily in the vicinity of Canon City, Colorado, for the conducting of research to improve metallurgy methods for the recovery of uranium concentrates, and for the processing of uranium-bearing ore available in the Canon City or Front Range or eastern slope areas of Colorado. The Contractor agrees to operate the pilot plant for the production of uranium concentrate meeting the specifications set forth in Article XX hereof, and to deliver, for sale to the Commission, the uranium concentrate meeting said specifications produced during the term of the contract which the Commission hereby agrees to purchase in accordance with the provisions of this contract; *provided*, the Commission shall not be obligated to purchase under this contract more than three hundred sixty thousand (360,000) pounds of U_3O_8 in uranium concentrate for any twelve months period (fractions of a year pro rata) during which this contract may be in force and effect.

2. The contract shall be in force and effect for the purpose of the Contractor selling to the Commission and the Commission purchasing from the Contractor uranium concentrate as provided in this contract, from the 1st day of December 1957 to and including November 30, 1958. The Contractor has the option, upon written notice to the Commission, not later than November 15, 1958, to extend the term of the contract for an additional term of twelve months, from December 1, 1958, to November 30, 1959, *provided*, Contractor's pilot plant is in operation and has been in operation under this contract not less than six months prior to the giving of such notice.

ARTICLE II—WEIGHING, SAMPLING, AND ASSAYING

1. Subject to the provisions of Article XVI hereof, all uranium concentrate delivered under this contract shall be weighed, sampled, and the moisture content thereof determined by the Commission at Grand Junction, Colorado, in accordance with Commission practice. The total weights, samples, and moisture content of each lot delivered hereunder, when arrived at in accordance with the provisions of this Article, shall be final and binding upon the parties hereto.

2. One sample shall be taken from each lot of uranium concentrate delivered under this contract and divided into four equal parts. The Contractor shall receive one part thereof and the remaining parts shall be retained by the Commission.

3. The Commission and the Contractor, each at its own expense, shall make, or cause to be made, independent assays of U_3O_8 content of samples of each lot of uranium concentrate. The results of the U_3O_8 assays shall be exchanged by crossing registered mail promptly after completion of assays. If the difference in the determination of the U_3O_8 content between the assay of the Commission and the assay of the Contractor does not exceed three-tenths of one percent (0.3%), the average of the two results shall be final and binding on both parties. If such difference exceeds three-tenths of one percent (0.3%), one of the parts of the sample retained by the Commission shall be submitted to the National Bureau of Standards or any other mutually acceptable laboratory for umpire assay of the U_3O_8 content thereof and the result of such assay shall be final if within the limits of the assays of the two parties; if not, the assay which is nearer to that of the umpire shall prevail. The cost of such assay shall be borne by the party whose original determination of the U_3O_8 content is further from the determination of the umpire. In the event the umpire's assay is equally distant from the assay of each party, such cost will be split equally.

4. The Commission shall, in addition to making an assay for U_3O_8 make or cause to be made, assays for each impurity listed in b. to k., inclusive, of paragraph 3 of Article XX hereof, which may be contained in concentrate delivered hereunder. The Contractor, in addition to making an assay for U_3O_8, may, at its option, make or cause to be made, assays for each impurity listed in b. to k., inclusive, of paragraph 3 of Article XX hereof, which may be contained in concentrate delivered hereunder. Assays for all such constituents will be exchanged simultaneously with the assays for U_3O_8. In the event that the assays with respect to such constituents differ, the Commission's assay shall govern unless the Contractor or the Commission shall, within five days of receipt of the other's assay, make a written request for umpire assay of any such impurity in dispute, *provided*, that the Contractor shall waive his right to umpire assay and shall accept the Commission's assay for any such constituent for which assay results were not exchanged by crossing registered mail simultaneously with U_3O_8 assays. In the event that umpire assay is requested, one of the parts of the sample retained by the Commission shall be transmitted to the National Bureau of Standards or any other mutually acceptable laboratory for umpire assay and the results thereof shall be final if within the limits of the assays of the two parties; if not, the assay which is nearer to that of the umpire shall prevail. The cost of umpire assay for each such impurity in dispute shall be borne by the party whose original determination of such impurity is further from the determination of the umpire. In the event that the umpire's assay is equally distant from the assay of each party, such cost will be split equally.

5. All costs incurred by the Commission in connection with weighing and sampling of uranium concentrate delivered to the Commission shall be borne by the Commission; *provided*, however, that if the Contractor elects to have its representative present at such weighing and sampling, the cost incurred by the Contractor in having such representative present shall be borne by the Contractor exclusively.

ARTICLE III—DELIVERY AND ACCEPTANCE

1. Subject to the provisions of Article XVI hereof, deliveries of uranium concentrate hereunder shall be made f. o. b. railroad cars or trucks at the Commission's warehouse at Grand Junction, Colorado. Such deliveries may be made at any time within normal Commission working days and hours on and after September 1, 1957, and may continue thereafter until the expiration of this contract, in accordance with the terms hereof.

2. Each calendar month's production of uranium concentrate from the pilot plant, except for normal pilot plant inventories, shall be delivered to the Commission by the fifteenth day of the succeeding calendar month, unless otherwise authorized in writing by the Commission.

3. The Commission reserves the right, in its discretion, to waive deviations from the specifications established in Article XX hereof, and by notice in writing to the Contractor to accept or reject any uranium concentrate delivered hereunder which, in accordance with Article II hereof, it is determined does not meet such specifications. As a condition to its acceptance of concentrate which does not meet specifications, payment for the U_3O_8 contained in such concentrate will be reduced in accordance with the provisions of Appendix A attached hereto and made a part hereof to the extent applicable.

4. In the event of rejection of concentrate which does not meet specifications, the Contractor shall, within ten (10) days after receiving notice thereof from the Commission, remove the rejected concentrate at its own expense, and shall re-treat it and redeliver it to the Commission, subject to the provisions of this contract. Any moneys paid to the Contractor for concentrate which is thus rejected shall be refunded to the Commission by the Contractor or applied by the Commission in reduction of amounts otherwise due to the Contractor, as the Commission may direct. The Contractor shall not be liable for loss of or damage to uranium concentrate delivered hereunder as provided in paragraph 1 of this Article, except that the Contractor shall become liable for loss or damage to such concentrate occurring after removal by the Contractor of rejected concentrate or after ten (10) days from the date of receipt by the Contractor of notice of final rejection by the Commission of the concentrate in accordance with paragraph 3 above, whichever date first occurs.

ARTICLE IV—PACKAGING

1. Uranium concentrate delivered under this contract shall be packaged by the Contractor as provided in Appendix B hereof.

2. Containers in which the concentrate is delivered hereunder shall be supplied by the Contractor and shall become the property of the Commission upon delivery to and acceptance of the concentrate by the Commission.

ARTICLE V—PAYMENTS

1. For all uranium concentrate produced in the Contractor's pilot plant and delivered to and accepted by the Commission, in accordance with Article III hereof, the Commission shall pay to the Contractor (subject to the provisions of paragraph 2 of this Article relating to interim and final payments) a price of Eight Dollars ($8.00) per pound of contained U_3O_8.

2. An interim payment equivalent to ninety percent (90%) of the price per pound, as provided in paragraph 1 of this Article, shall be made promptly by the Commission to the Contractor upon the delivery of each lot of uranium concentrate and upon receipt by the Commission of the Contractor's properly certified invoice. This payment shall be based upon the Contractor's own statement of the weight of the contained U_3O_8 in uranium concentrate delivered. The balance due the Contractor for each lot of uranium concentrate delivered to and accepted by the Commission shall thereafter be determined by the Commission upon receipt of the Contractor's properly certified invoices, together with such substantiating evidence as may be satisfactory to the Commission, after completion of the weighing, sampling, and analysis of the uranium concentrate as provided for in Article II of this contract. Final payment of the amount thus determined to be due to the Contractor for each lot of uranium concentrate shall thereupon be made promptly by the Commission; *provided*, that if as a result of such weighing, sampling, and analysis it is determined that the interim payment made to the Contractor by the Commission exceeds the total amount due, the amount of such overpayment shall be refunded by the Contractor to the Commission or applied in the reduction of amounts otherwise due the Contractor, as the Commission may direct.

ARTICLE VI—CONTRACTOR'S ORE RESERVE DATA

The Contractor agrees to make available to the Commission upon the Commission's request during the term of this contract, all uranium ore reserve data on lands in the United States and its territories which are or may be owned or controlled by the Contractor.

ARTICLE VII—NONDISCRIMINATION

In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of the nondiscrimination clause.

The Contractor further agrees to insert the foregoing provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials.

ARTICLE VIII—COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or, in its discretion, to deduct from the contract price or consideration the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE IX—TAXES

1. Except as otherwise expressly provided herein, the contract price is deemed to include all Federal, State, and local taxes (including fees and charges), which would be payable in respect of this contract if no interest of the Federal Government were involved. The Contractor agrees to furnish the Commission with such information as to its payment or nonpayment of any such taxes as the Commission may request.

2. The Contractor agrees to credit toward payment of the contract price or to pay to the Commission the amount of any such Federal, State, or local tax which, in consequence of a constitutional or statutory immunity or exemption under Federal, State, or local law based upon the direct or indirect relationship of the subject matter of this contract to the Atomic Energy Commission or the United States of America (hereinafter referred to as a "precluded tax"), is either not paid or, if paid, is refunded, rebated, or credited for the benefit of the Contractor. Credits or payments of such amounts shall include any interest paid or credited to the Contractor but shall be reduced by all reasonable expenses, including attorneys' fees, incurred by the Contractor with the approval of the Commission in connection with the taxes exempted, refunded, rebated, or credited.

3. The Commission reserves the right to direct that exemption shall be sought with respect to any tax which it may designate as a precluded tax. In such case, the Contractor shall—

a. assert exemption from the tax to the appropriate taxing authority and submit to such taxing authority any tax exemption certificate or similar evidence of exemption with respect to the tax in question furnished by the Commission;

b. in the event of the refusal of the taxing authority to grant the exemption, promptly notify the Commission of such refusal and if authorized by the Commission, pay the tax, taking all necessary action to preserve rights to refund thereof;

c. in the event of such payment, take all necessary action to secure refund of the tax for the benefit of the Commission or, at the Commission's request, to permit the Commission to join with the Contractor in any proceedings for the recovery of the tax or to sue for the recovery in the Contractor's name (it being understood that the Commission will reimburse the Contractor for all reasonable expenses, including attorneys' fees, incurred by the Contractor with the approval of the Commission in seeking recovery of the tax.)

ARTICLE X—CONVICT LABOR

In connection with the performance of work under this contract, the Contractor shall not employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE XI—OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE XII—DISPUTES

Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. Within thirty (30) days from the date of receipt of such copy, the Contractor may appeal by mailing or otherwise furnishing to the Contracting Officer a written appeal addressed to the Commission, and the decision of the Commission shall, unless determined by a court of competent jurisdiction to have been fraudulent, arbitrary, capricious, or so grossly erroneous as necessarily to imply bad faith, or is not supported by substantial evidence, be final and conclusive; provided, that if no such appeal to the Commission is taken, the decision of the Contracting Officer shall be final and conclusive. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

ARTICLE XIII—BUY AMERICAN ACT

The Contractor agrees that there will be delivered under this contract only such unmanufactured articles, materials, and supplies (which term "articles, materials, and supplies" is hereinafter referred to in this clause as "supplies") as have been mined or produced in the United States, and only such manufactured supplies as have been manufactured in the United States substantially all from supplies mined, produced, or manufactured, as the case may be, in the United States. The foregoing provisions shall not apply (i) with respect to supplies exempted by the Commission from the application of the Buy American Act (41 U. S. C. 10a-d), (ii) with respect to supplies for use outside the United States, or (iii) with respect to the supplies to be delivered under this contract which are of a class or kind determined by the Commission not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, or (iv) with respect to such supplies from which the supplies to be delivered under this contract are manufactured, as are of a class or kind determined by the Commission not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, provided, that this exception (iv) shall not permit delivery of supplies manufactured outside the United States if such supplies are manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

ARTICLE XIV—EXAMINATION OF RECORDS

1. The Contractor agrees that the Commission and the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract until the expiration of three years after final payment under this contract.

2. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall

have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor involving transactions related to the subcontract until the expiration of three years after final payment under this contract. The term "subcontract" as used herein means any purchase order or agreement to perform all or any part of the work or to make or furnish any materials required for the performance of this contract, but does not include (i) purchase orders not exceeding $1,000.00, (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public, or (iii) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract.

3. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE XV—WALSH-HEALEY ACT

To the extent that this contract is subject to the Walsh-Healey Public Contracts Act, as amended (41 U. S. C. 35–45), there are hereby incorporated by reference the representations and stipulations required by said Act and regulations issued thereunder by the Secretary of Labor, such representations and stipulations being subject to all applicable rulings and interpretations of the Secretary of Labor which are now or may hereafter be in effect.

ARTICLE XVI—CHANGES

The Contracting Officer may at any time, by a written order, make changes, within the general scope of this contract, in any one or more of the following: (1) specifications for U_3O_8 concentrate (ii) method of shipment or packing for U_3O_8 concentrate; (iii) place of delivery; and (iv) place of weighing, sampling, and assaying. If any such change causes an increase or decrease in the cost of, or the time required for performance of this contract, an equitable adjustment shall be made in the contract price or delivery schedule, or both, and the contract shall be modified in writing accordingly. Any claim by the Contractor for adjustment under this clause must be asserted within thirty (30) days from the date of receipt by the Contractor of the notification of change; provided, however, that the Contracting Officer, if he decides that the facts justify such action, may receive and act upon any such claim asserted at any time prior to final payment under this contract. Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled, "Disputes." However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

ARTICLE XVII—ASSIGNMENT AND ASSIGNMENT OF CLAIMS

Neither this contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor, except as hereinafter in this Article provided, or except as otherwise expressly authorized in writing by the Contracting Officer.

Pursuant to the provisions of the Assignment of Claims Act of 1940 (31 U. S. Code 203, 41 U. S. Code 15) moneys due or to become due from the Government under this contract may be assigned to any bank, trust company, or other financing institution, including any Federal lending agency, and may thereafter be further assigned to any such institution. Any such assignment or reassignment shall cover all amounts payable under this contract and not already paid, and shall not be made to more than one party except that any such assignment or reassignment may be made to one party either for its account or as agents or trustee for two or more parties participating in such financing.

ARTICLE XVIII—SECURITY

1. *Contractor's Duty to Safeguard Restricted Data and Other Classified Information.* In the performance of the work under this contract the Contractor shall, in accordance with the Commission's security regulations and requirements, be responsible for safeguarding restricted data and other classified matter and protecting against sabotage, espionage, loss and theft, the classified documents, materials, equipment, processes, etc., as well as such other material of high intrinsic or strategic value as may be in the Contractor's possession in connection with performance of work under this contract. Except as otherwise expressly provided in the specifications the Contractor shall, upon completion or

termination of this contract, transmit to the Commission any classified matter in the possession of the Contractor or any person under the Contractor's control in connection with performance of this contract.

2. *Regulations.* The Contractor agrees to conform to all security regulations and requirements of the Commission.

3. *Definition of Restricted Data.* The term "Restricted Data" as used in this Article means all data concerning (1) design manufacture or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data Category pursuant to Section 142 of the Atomic Energy Act of 1954.

4. *Security Clearance of Personnel.* Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1954, the Contractor shall not permit any individual to have access to Restricted Data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security. As used in this paragraph, the term "designated investigating agency" means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1954.

5. *Criminal Liability.* It is understood that disclosure of information relating to the work or services ordered hereunder to any person not entitled to receive it, or failure to safeguard and Restricted Data or any top secret, secret or confidential matter that may come to the Contractor or any person under the Contractor's control in connection with work under this contract, may subject the Contractor, his agents, employees, and subcontractors to criminal liability under the laws of the United States. (See the Atomic Energy Act of 1954, 68 Stat. 919). (See also Executive Order 10104 of February 1, 1950, 15 F. R. 597.)

ARTICLE XIX—RECORDS, REPORTS AND INSPECTIONS

The Contractor agrees to submit such reports covering the period of this contract on inventories of ores, ores in process, finished products, and tailings and metallurgical recoveries, as the Commission may reasonably request, and agrees that the Commission shall have the right to inspect the records, work, and activities of the Contractor under this contract at such time and in such manner as the Commission shall deem appropriate.

ARTICLE XX—DEFINITIONS AND SPECIFICATIONS

1. The term "Commission" as used in this contract means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for the purpose of deciding an appeal under the Article entitled, "Disputes."

2. The term "lot," as used in this contract to describe a quantity of uranium concentrate, shall mean a quantity of approximately ten thousand (10,000) pounds of uranium concentrate unless otherwise agreed upon by the Commission and the Contractor.

3. The specifications determined on a dry weight basis for uranium concentrate under this contract are:

a. Minimum U_3O_8 content of 75.00%.

b. Maximum V_2O_5 content of 2.00% of the U_3O_8 content.

c. Maximum phosphate (PO_4) content shall not exceed the sum of 1.31 times the iron (Fe) content plus 2.00% of the U_3O_8 content, provided that the total phosphate content shall not exceed 6.00% of the U_3O_8 content.

d. Maximum molybdenum (Mo) content of 0.60% of the U_3O_8 content.

e. Maximum boron (B) content of 0.030% of the U_3O_8 content.

f. Maximum halogens, Cl, Br, and I, expressed as Cl, content of 0.10% of the U_3O_8 content.

g. Maximum fluorine (F) content of 0.10% of the U_3O_8 content.

h. Maximum copper (Cu) content of 1.70% of the U_3O_8 content.

i. Maximum arsenic (As) content of 0.80% of the U_3O_8 content.

j. Maximum carbonate (CO_3) content of 1.00% of the U_3O_8 content.

k. Maximum sulfate (SO_4) content of 15.00% of the U_3O_8 content, provided that multiplying 100 times the ratio of the calcium (Ca) content to

U_3O_8 content by 100 times the ratio of sulfate (SO_4) content to U_3O_8 content will give a product that does not exceed the number 8.50.

l. Maximum moisture (H_2O) content of 10.0% (determined on an "as received" basis and drying at 110° C.).

All uranium concentrate shall be dried at a temperature of 560° C. or less and shall pass through a quarter-inch screen.

4. Unless otherwise provided, weights are avoirdupois dry weights. For example, the term "ton" means a short ton of 2,000 pounds avoirdupois.

5. The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

In witness whereof, the parties hereto have executed this agreement as of the day and year first above written, intending to be legally bound thereby.

UNITED STATES OF AMERICA,
UNITED STATES ATOMIC ENERGY COMMISSION,
/s/ ALLAN E. JONES, *Manager, GJOO.*
COTTER CORPORATION (No Stockholder's Liability),
/s/ PARKER WILSON, *President.*

Witnesses:
/s/W. SPENCER HUTCHINSON, Jr.
/s/ESTON B. STEPHENSON.
/s/R. J. GASKIN, *Secretary.*

ACKNOWLEDGMENT

I, R. J. Gaskin, certify that I am the Secretary of the corporation named as the Contractor herein; that Parker Wilson who signed this contract on behalf of the Contractor was then President of said corporation; that said contract was duly signed by and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

In witness whereof, I have hereto affixed my hand and the seal of said corporation this 14th day of May, 1957.

[CORPORATE SEAL] /s/ R. J. GASKIN, *Secretary*

APPENDIX A

When uranium concentrate which fails to meet the specifications as set forth in Article XX of this contract is accepted by the Commission under the provisions of Article III of this contract, the price payable for the U_3O_8 content of each such lot of concentrate as computed in accordance with the provisions of this contract shall be reduced in accordance with the schedules set forth below. Fractional parts of a pound shall be computed to the nearest one-hundredth of one pound.

Uranium Oxide (U_3O_8)

Concentrate lots containing less than seventy-five percent (75.00%) U_3O_8 but not less than fifty percent (50.00%) U_3O_8 shall be reduced in price by an amount for each pound of contained U_3O_8 as follows:

U_3O_8 content of uranium concentrate (percent):	*Reduction per pound contained U_3O_8*
74–74.999	$0.004
73–73.999	.008
72–72.999	.012
71–71.999	.016
70–70.999	.020
69–69.999	.024
68–68.999	.028
67–67.999	.032
66–66.999	.036
65–65.999	.040
64–64.999	.044
63–63.999	.048
62–62.999	.052
61–61.999	$0.056
60–60.999	.060
59–59.999	.070
58–58.999	.080
57–57.999	.090
56–56.999	.100
55–55.999	.110
54–54.999	.120
53–53.999	.130
52–52.999	.140
51–51.999	.150
50–50.999	.160

Concentrate lots containing less than fifty percent (50%) U_3O_8 may be accepted by the Commission upon agreement by the Commission and the Contractor as to an appropriate reduction in the price to be paid for such concentrate lots.

Vanadium Oxide (V_2O_5)

Concentrate lots containing a total number of pounds of V_2O_5 in excess of 2.00% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to $0.75 for each pound of contained excessive V_2O_5 pus an additional $0.25 for each pound of contained V_2O_5 in excess of 5.00% of the number of pounds of contained U_3O_8.

APPENDIX B

Contract No. AT(05–1)–735

The Contractor shall package uranium concentrate delivered under this contract in the following manner:

1. Concentrate shall be packaged in fifty-five gallon steel (18-gauge minimum) full open head drums equipped with (a) bolt locking ring closures of proper size to hold the tops of drums securely and (b) rubber gaskets to prevent spillage of concentrate while in transit.
2. All drums shall be 34½ inches high and 22½ inches in diameter, plus or minus one-half inch.
3. Concentrate in any individual container shall not exceed one thousand (1,000) pounds.
4. Empty drums must be briefly weighed and the weight of each such drum marked thereon in the presence of the Commission's representative, unless otherwise waived in writing by the Commission.
5. The inside of the drum must be clean and free of foreign matter at time of packaging.
6. The outside of the drum must be clean.
7. Each drum shall be stenciled or otherwise marked with paint in a legible manner on top and side with the contract number, lot number, drum number, and tare weight.
8. The Commission reserves the right to refuse to accept any lot of uranium concentrate not packaged in accordance with the foregoing conditions and requirements, until such time as the Contractor meets such conditions and requirements.

Phosphate (PO_4)

Concentrate lots containing a total number of pounds of phosphate (PO_4) in excess of the sum of 1.31 times the number of pounds of contained iron (Fe) plus 2.00% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to Five Dollars ($5.00) per dry short ton of concentrate plus twenty-five cents ($0.25) for each pound of contained excessive phosphate, provided that concentrate lots containing phosphate (PO_4) in excess of 6.00% of the U_3O_8 content shall be reduced by an additional Sixty Dollars ($60.00) per dry short ton of concentrate for each one percent (1.00%) of contained phosphate in excess of 6.00% of the U_3O_8 content.

Molybdenum (Mo)

Concentrate lots containing a total number of pounds of molybdenum (Mo) in excess of 0.60% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to One Dollar ($1.00) for each pound of contained excessive molybdenum plus an additional Three Dollars ($3.00) for each pound of contained molybdenum in excess of 2.40% of the number of pounds of contained U_3O_8.

Boron (B)

Concentrate lots containing a total number of pounds of boron in excess of 0.030% but not in excess of 0.100% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to the product of two cents ($0.02) times the number of pounds of contained U_3O_8. Concentrate lots containing a total number of pounds of boron in excess of 0.100% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to the product of fifty cents ($0.50) for each multiple of 0.100% which the boron content is of the U_3O_8 content, times the number of pounds of contained U_3O_8.

Halogens (Chlorine, Cl; Bromine, Br; and Iodine, I)

Concentrate lots containing a total number of pounds of combined halogens, expressed as Cl, in excess of 0.10% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to the sum of four cents ($0.04) plus one cent ($0.01) for each 0.10% in excess of the first 0.10%, times the number of pounds of contained U_3O_8.

Fluorine (F)

Concentrate lots containing a total number of pounds of fluorine (F) in excess of 0.10% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to $25.00 per dry short ton of concentrate, plus $14.50 for each pound of contained excessive fluorine.

Copper (Cu)

Concentrate lots containing a total number of pounds of copper (Cu) in excess of 1.70% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to $32.00 per dry short ton of concentrate. Concentrate lots containing a total number of pounds of copper (Cu) in excess of 10.00% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to $0.30 times the number of pounds of contained U_3O_8.

Arsenic (As)

Concentrate lots containing a total number of pounds of arsenic (As) in excess of 0.80% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to $5.00 per dry short ton of concentrate, plus $0.25 for each pound of contained excessive arsenic.

Carbonate (CO_3)

Concentrate lots containing a total number of pounds of carbonate (CO_3) in excess of 1.00% of the total number of pounds of contained U_3O_8 shall be reduced in price by an amount equal to $40.00 per dry short ton of concentrate.

Sulfate (SO_4)

Concentrate lots containing a total number of pounds of sulfate (SO_4) in excess of 15.00% of the total number of pounds of contained U_3O_8, or if multiplying 100 times the ratio of calcium (Ca) content to U_3O_8 content by 100 times the ratio of sulfate (SO_4) content to U_3O_8 content gives a product that exceeds the number 8.50, shall be reduced in price by an amount equal to $50.00 per dry short ton of concentrate.

Moisture (H_2O)

Concentrate lots containing moisture in excess of 10.00% on an "as received" basis shall be reduced in price by an amount equal to One Dollar ($1.00) for each pound of contained moisture in excess of 10.00% moisture on an "as received" basis.

Screen Size

Concentrate lots which the Commission determines to contain an excessive amount of plus quarter-inch particles will be rejected and all particles in the lot must be reduced by the Contractor to pass a quarter-inch screen before the lot will be accepted by the Commission.

Rejection

Compensation in the amount of $50.00 for each lot rejected shall be made to the Commission by the Contractor.

Chairman DURHAM. You are going to continue to go forward under this contract?

Mr. WILSON. Yes, sir; we must.

Chairman DURHAM. What is there to fear, then? You have an extension of time by the Commission to complete it?

Mr. WILSON. Yes, sir; we have a 3-month extension which moves the period forward.

Our problem is this: A small pilot mill will not take care of the area and right along it was contemplated that following on the heels

of the pilot mill a mill of substantial production capacity would be built.

This is cited in our contract.

Chairman DURHAM. This is not a production mill?

Mr. WILSON. No, sir; it is not. Actually, the limitation, on the time of operation of this mill, is 2 years, maximum, and that barely gives us time to get our money out and possibly not.

Of course, no one would enter into this metallurgical program, continue it over a long period of time, on ores which we were told very fairly by the Commission, "These are very tough; the other mills have failed to break this problem, and if you take it you are on your own."

We did and Cotter hired the best brains we could buy and the foundation came up with the answer, there is no question about it.

Chairman DURHAM. There is no object in putting up the pilot mill and not putting up a processing plant at some time?

Mr. WILSON. That is right, but we have no choice. If we have no large mill, that is all we can do, and we intend to do it.

We have been accused of nonperformance. I do not understand it, but we intend to go forward. I am not at all sure that this pilot mill is the right thing.

There are some 20 different properties that have promise and have some proven reserves. A small pilot mill cannot possibly mill them. We have tested all these ores. We know that they are amenable. We are ready to go forward with the big mill.

The problem is that this policy change came right in the middle of our operation and of our advanced plans.

Chairman DURHAM. Have you gone far enough with your pilot plant to experiment with the setup?

Mr. WILSON. Not with our pilot mill.

Chairman DURHAM. Not through your mill, but some others?

Mr. WILSON. Yes, through the foundation.

Chairman DURHAM. You have already proved, then, that this ore is amenable?

Mr. WILSON. Yes, sir; we have definitely proven it.

As a matter of fact, the Grand Junction office of the Atomic Energy Commission has asked us for this process and we have supplied it to them on a confidential basis.

Chairman DURHAM. Are there any questions, Mr. Ramey?

Mr. RAMEY. I think Senator Anderson has several questions, most of which are covered in Mr. Wilson's statement. I think one is:

Does Cotter have any holdings of ore reserves that would help support a larger mill?

Mr. WILSON. Yes, we do; but this is going to be primarily, I would say, a custom mill.

Let me say that we have numerous properties of our own; several properties of our own.

As a matter of fact, one of them has been stripped and is ready to mine right now, stripped at great cost.

Chairman DURHAM. This mill is being set up primarily to process this type of ore.

Mr. WILSON. Sir, there are about 7 or 8 different types of ore in the area, but it has been demonstrated by the foundation that our process can handle them, sir.

Chairman DURHAM. All of them?

Mr. WILSON. Yes, sir.

Mr. RAMEY. Another question would be:

Are there any other competing interests in the area that are trying to arrange to construct a larger mill?

Mr. WILSON. Yes, there are. We have been approached by one company who offered us a small percentage in their larger mill, but we have the process, we have developed it, we have the ore commitments, we are ging to build a pilot mill, and I do not quite see how they feel that we are entitled to only a small cut in a piece of their mill at this point, or at any point.

Yet they seem to feel very confident that they are going to get this contract.

Chairman DURHAM. There is nobody processing the ore at the present time?

Mr. WILSON. No.

You see, Mr. Chairman, this area is absolutely quiescent and will be dead unless a mill comes into it.

As a matter of fact, I was not alarmed when Mr. Johnson's speech was made. I thought that we fitted right into the pattern of the speech. He mentioned there that if any mills are granted they will be granted in those areas which do not now have mills and they will probably be small mills of 200 tons per day capacity.

Chairman DURHAM. That is the way I understood it.

Mr. WILSON. So I was not alarmed about it until we were told—the emphasis is on the "if" and there may no mill. But, as I said, we have a contract.

Mr. RAMEY. Are these other interests dealing with AEC? Are they going forward with another mill?

Mr. WILSON. I really don't know; I could not say.

Chairman DURHAM. They would have to go through the same metallurgical process, establishing the fact that the ore was amenable.

Mr. WILSON. Also, they surely will have to get the ore committed to us away from us, but the largest known reserve in the area is Denver Golden, and Mr. Brodie who is going to speak right after me, is committed to our mill.

As a matter of fact, they are going to be associated with us in the mill.

Mr. TOLL. Could I ask whether your 50-ton pilot plant could easily be increased to the 200-ton plant?

Mr. WILSON. Yes; that is what we plan to do. I am not a mill man, but it is our understanding, talking with experts in the field, that if we set up this pilot mill with overcapacity in certain parts of the equipment, which, of course, if it is only going to be a pilot mill, will only be used part of the time, but if we do that then we can expand based on the pilot plant.

Otherwise, we would not go ahead. We are developing metallurgy and processing for what? If there is not going to be a mill, why, it is for nothing.

Chairman DURHAM. Would you mind stating what the cost of the pilot plant is that the contract calls for?

Mr. WILSON. We have an estimate; yes. We have an estimate at $650,000. Now, that estimate was prepared hurriedly, but we think

that is in the ball park because it has been given to us by people who are experienced in this field.

Chairman DURHAM. How much does AEC participate in that, as to funds?

Mr. WILSON. Not at all. We put all the money up, sir, for the metallurgical testing, for proving the ores in the area, and, of course, by virtue of the fact that the people in this area believe in us, and that we were coming in with a mill, they went out and spent a lot of money, and now they have no market.

Chairman DURHAM. Where are you going to get your money for building the pilot plant? Do you expect to get that out of the metallurgical contract?

Mr. WILSON. All we can do, sir, is to handle extremely high-grade ores and hope at the end of 2 years we will come out, because, you see, our price under our pilot-mill contract is $8. Now, that is a very low price, and the conception of a pilot mill and a purchase contract, as I understand it, is that, if you are going to run your uranium ore through the mill, what are you going to do with your end product? For a 2-year proposition it is not at all promising, but we will build it in furtherance of the area and in furtherance of our own understanding of the contract.

Chairman DURHAM. But you will not build a processing plant?

Mr. WILSON. You mean a pilot or large mill?

Chairman DURHAM. A large mill?

Mr. WILSON. We cannot build a large mill unless it is granted.

Chairman DURHAM. But you would like to build one?

Mr. WILSON. Yes; that has been our intention right along.

Chairman DURHAM. Are there any further questions?

Thank you very much, Mr. Wilson, for your statement.

The next witness is Mr. Brodie, Denver-Golden Oil & Uranium Co. Mr. Brodie.

STATEMENT OF G. H. BRODIE, VICE PRESIDENT AND GENERAL MANAGER OF DENVER-GOLDEN OIL & URANIUM CO., DENVER, COLO.

Mr. BRODIE. My name is G. H. Brodie. I am vice president and general manager of Denver-Golden Oil & Uranium Co., and a geologist. I live in Denver, Colo., and I have been actively engaged in uranium exploration and mining since 1953.

Denver-Golden is part owner and operator of the Schwartzwalder uranium mine, 8 miles north of Golden, in the Front Range, eastern slope area, of Colorado.

Chairman DURHAM. Is that the range that the Senator referred to a while ago?

Mr. BRODIE. Yes; this is in the area described at length by Mr. Wilson.

Chairman DURHAM. Also by Senator Allott?

Mr. BRODIE. Yes, sir. The ore in this mine is of highest grade. Because of its unique primary mineralogy and because most of the existing uranium mills of the United States have been designed to treat low-grade, secondary ores, our mine has had a marketing prob-

lem from its inception—ore derived from the weathering of primary ores. Our ores are different from the North.

Chairman DURHAM. This is mined underground?

Mr. BRODIE. Yes, sir. This is a vein-type hydrothermal deposit, very much like the normal metal occurrences in veins and sheers that we are used to.

Chairman DURHAM. What other minerals does it contain?

Mr. BRODIE. Very few other minerals of any importance. The mineral here is pitchblende and uranimite in association with iron.

Chairman DURHAM. I believe that has always been the highest-grade ore, pitchblende.

Mr. BRODIE. Yes, sir; pitchblende is the highest mined mineral in its pure state. It is 75 to 80 percent uranium content. Our grade for the past 4 months has been in excess of 1 percent of our shipments. We visualized the mine's overall potential will probably level out roughly 0.80, 0.803; that is our guess at the moment.

And our mine is, we think, typical of what will prove to be a large number of this type mine in the Front Range of Colorado. We think ours is the forerunner. We know 2 or 3 more that are in the process of various stages of beginning, and we see enough geologic suggestion that the region should contain many such deposits, and we are in the early phases of this today. As a result, our ore has been subject to various treatment penalties and limitations on production which have been a tremendous economic burden to the operation.

Other mines in various stages of development in the same area have had similar marketing problems for the same mineralogical reasons. Several of the mines of the area have no present market whatsoever. Inducement to additional mining activities and the development of increasing ore reserves depend upon the establishment of an adequate market. Only if these mines can be made profitable will they be of benefit, either to the operators or to the Nation, despite the fact that in some of these reserves are some of the highest grades ores of the country.

This problem was especially recognized by one organization, the Cotter Corp., which took steps some 18 months ago to attempt to resolve the difficult metallurgical problems inherent in these important eastern-slope ores. This was a pioneering venture and, as with all pioneering ventures, it involved costly expenditures of time and of money. It was marked by a stubborn determination to solve the complex problem presented by Front Range metallurgy.

Denver-Golden's confidence in the Cotter Corp. and its successful efforts is such that it has discussed with them participation in their mill construction. Denver-Golden will probably have a direct economic interest in the Cotter mill. Our decision to cooperate fully with Cotter was reinforced by a request from the Grand Junction Operations Office of the Commission over a year ago that we work with them. At that time we have the possibility of entering into a long-term sales contract with another mill, which we abandoned in favor of cooperation with Cotter and its program for processing our ores in our area.

We have been shipping our ore for the past 2 years over 500 miles to Salt Lake City. Shipping to this facility involves not only high freight rates, but also per-ton treatment penalties almost equal to

the total per-ton processing cost contemplated in the Cotter mill proposal. Cotter has solved the metallurgical problem of Front Range-eastern slope ores. Cotter is willing to build any size mill which the Front Range needs to take care of its ore reserves. Cotter has presented a specific 200-ton proposal to the Atomic Energy Commission.

I am here to try to make clear that the present problems of the Front Range uranium miner will be solved by a mill of the type proposed by the Cotter Corp. and to stress that this proposal will not only achieve solution of our present problems, but will also enable this important geologic province to develop its full potential of high-grade uranium production in the national interest.

Cotter is the only organization which has taken action to meet the needs of the eastern slope miner. It holds a contract from the Commission envisaging construction of a production facility of adequate size.

I believe Cotter's demonstrated achievements must be recognized, not only as a contractual, but also as an equitable matter through approval of Cotter's proposal for a Front Range uranium mill.

Thank you very much.

Chairman DURHAM. Thank you, Mr. Brodie.

Mr. Brodie, how many tons of ore have you shipped to Salt Lake City?

Mr. BRODIE. Approximately 29,000 tons, sir.

Chairman DURHAM. What did it cost on a dollar basis to ship it there?

Mr. BRODIE. I would estimate the average cost per ton—the freight rates changed a little bit—but the average total cost would be on the order of $10, $10.20, of which the Commission has borne, or the mill, I am not sure how that works, has borne the first $6.

Chairman DURHAM. Otherwise they have been subsidizing that ore shipped to Salt Lake City?

Mr. BRODIE. Indeed. We could not have done it otherwise.

Chairman DURHAM. I was thinking of the differential. If you are going to have a plant there, you will get rid of the cost. If you are going to buy the ore you have to have a contract to sell the ore.

Mr. BRODIE. We have been proceeding on a day-by-day basis. I believe this is the first time that we have anything that has a semblance of contractual nature.

We have just finished the first 30 days of a 60-day letter contract from the buyer. We are to receive notice on the 15th of March whether or not they will continue to take it.

We are cut back to 500 tons a month under the present arrangement, from a normal production capacity, which we have very laboriously built up, of 1,800 to 2,000 tons a month.

It has been an interesting 2 years, a day-by-day problem.

If I may add, our present permit which we have been granted by the mill to sell to them this 500 tons has certain stipulations, one of which is, I would think, fairly unique. We must maintain a minimum grade of 0.75, which is substantially higher, of course, than I would say 95 percent of the mines in the country can ever reach on a 1-month basis.

It so happens that our mill is such that we can do it.

Chairman DURHAM. Can other mines operate on that basis?

Mr. BRODIE. Some few farsighted, able and fortunate people who have this particular type of ore that treats on an optimum basis at a minimum cost have long-term contracts of various types. But certainly no one in the Front Range has any kind of contract.

We have developed these mines in the thought that uranium was important. We were told it was important, and we have gone all out.

Chairman DURHAM. When was it first discovered?

Mr. BRODIE. In the Front Range?

Chairman DURHAM. Yes.

Mr. BRODIE. The first discovery was made by that remarkable man, Fred Schwartzwalder, from whom we bought the mine. He first discovered it in 1949 and I think it took him about 4 years to find out that he had a mine in 1953 and we purchased the property from him in 1955.

Chairman DURHAM. Thank you very much, Mr. Brodie.

Mr. BRODIE. Yes, sir.

Chairman DURHAM. I have a telegram to the chairman of the Joint Committee from Eliot H. Goldstein. I also have a statement here by Mr. Max W. Bowen, which was offered for the record. Without objection they will both be placed in the record.

(The telegram referred to follows:)

I am an independent uranium producer in the Colorado Front Range. We have been selling our ore to Vitro Uranium Co. in Salt Lake City, but in September 1957 we were told by Vitro they could no longer buy our ore. We searched frantically for 3 months for a market and finally found one with Union Carbide at Rifle, Colo.

At present we are selling to them. I am convinced that there is not enough protection for the independent uranium miner if his only market is the private mill. By simply refusing to buy our ore the mill can force us out of business.

If this is one with enough independent miners a monopoly is sure to develop and only those companies who have mills will be mining ore. The mills are in existence only by virtue of Government contract and yet they have the power of life and death over the independent miner.

If more details are desired by the committee, please refer to my correspondence file with Senator John Carroll. Please make this communication a part of the hearing record. I will appreciate an opportunity to testify before the committee during the April hearings.

ELIOT H. GOLDSTEIN.

(The statement referred to is as follows:)

STATEMENT OF MAX W. BOWEN, REPRESENTING GOLDEN CYCLE CORP., COLORADO SPRINGS, COLO.

Chairman Durham and members of the Joint Committee, may I express my appreciation to you for the privilege of making a few comments upon the problems confronting the producers of uranium ore under the confusing circumstances that exist today.

I will preface my remarks by stating that it is my firm conviction that the Atomic Energy Commission has administered the Atomic Energy Act most admirably and fairly to both the large and small operator.

It is not my intent to find fault nor to criticize either the AEC or the ore-processing mills, for their record of accomplishments during the few years they have been operating in the raw materials procurement program through the "yellow cake" stage, speaks irrefutably of the success of the program and its administration.

The preceding witnesses have discussed amply the matters of policy, foreign and domestic commitments, lack of sufficient milling capacity, suggested solutions—some workable and some decidedly unworkable—consequently I will

refrain from repetitive arguments and confine my statements to a few examples and facts.

The impact of the detrimental effect upon the uranium industry caused by the recent change in the uranium concentrate purchase program, which reflects back upon the ore-purchase program, has affected very seriously the economy of several uranium-producing areas together with the financial predicament in which several of the former prosperous mining companies find themselves today as a result of this change in policy.

I would like to cite the example of our company merely because I have all the facts pertaining to its operation, hence can speak authoritatively about it. However, many other companies have suffered identically with our company as a result of the curtailment policy. The Golden Cycle Corp. that I represent, whose main office is in Colorado Springs, Colo., has been successful in the gold mining and milling business for over 60 years, and I have been with the corporation for the last 30 years.

The corporation has operated gold mines in the Cripple Creek District in Colorado; lead and zinc mines in Colorado; a coal mine near Colorado Springs for over 40 years; mills in Colorado Springs and Cripple Creek District for treatment of gold and silver ores, which also treated a large tonnage of base metal ore during World War II; operated the Midland Terminal Railroad between Colorado Springs and Cripple Creek, Colo., for over 35 years; operated sand and gravel pits and rock quarries for many years.

Golden Cycle Corp., obtained an AEC lease on land at Atkinson Mesa near Uravan, Colo., in 1953 and sank the first deep shaft in the Colorado Plateau area to mine uranium ore at a depth of over 600 feet and has produced over 2 million pounds of U–308 during the past 5 years.

The corporation has engaged in numerous exploration projects and expended considerable money in its search for commercial uranium-ore deposits. In July 1957 the Golden Cycle Corp. helped to form a subsidiary corporation, Giant Cycle Corp., in which it had a 50-percent stock interest and 100-percent management interest.

Giant Cycle Corp. has been very active in the exploration and development of a number of properties in the Edgemont, S. Dak., area. This work resulted in the production of 5,000 tons of ore for each month, October and November, and 6,000 tons in December of 1957, which added greatly to the economy of this area.

On January 14, 1958, a telegram was received by Giant Cycle Corp. from the Mines Development Co.—owner and operator of the uranium-ore processing mill located at Edgemont, S. Dak.—advising us to stop all ore shipments to the mill until further notice. We were advised by the mill that as a result of a discussion of a proposed quota-restrictive plan, there was a great increase in shipments of ore to the mill in early January, with which the mill was unable to cope.

Giant Cycle was forced by this action to drastically curtail its exploration, development, and production due to the uncertainty caused by the action of the mill. The Mines Development office called our Edgemont office the latter part of January and gave us permission to ship an additional 200 tons for the remainder of the month.

On February 3, 1958, we were advised that we could ship at the rate of 500 tons per week until further notice and more recently our monthly quota has been set at 2,350 tons of the same grade of ore we shipped during October, November and December during which months we shipped 5,000, 5,000, and 6,000 tons, respectively.

This sudden and abrupt curtailment of our production as well as that of every other mining company or individual shipper that had been shipping to this particular mill, resulted in grave consequences, not only to the mining companies, their employees and families but likewise caused a mild hysteria among the business establishments, supply and machinery distributors and the service companies in the Edgemont area and also in eastern Wyoming.

This curtailment affected each and every one of the other 60 shippers in these areas. Giant Cycle's labor force was reduced overnight by 65 percent, as occurred likewise in other operations in the area. This reduction in employment was almost identical with that in the Gas Hill's area as stated yesterday by Governor Simpson and Senator Barrett, from Wyoming.

Giant Cycle Corp. spent a sizable amount of money in exploratory drilling and the development of these properties, as has other companies in this area, but with the uncertainty of a market for our ore and with a definite reduction in quotas we are hesitant in planning future work. We were operating four drilling rigs but are now operating only one and that one on part-time basis.

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The Golden Cycle Corp. acquired an interest in uranium properties in the Marysvale, Utah, district in August 1957 and invested a substantial amount of money in exploratory and development work but were soon faced with a curtailment program by the Vitro mill in Salt Lake City, which purchased our ore.

Our quota there started at 1,000 tons per month, which was adequate for us during our exploratory phase, but this was soon reduced to 5,000 tons per month and in 2 or 3 weeks further reduced to 300 tons per month, under which we are now operating. This low quota does not provide for much exploration and development work and necessitated a reduction in employment amounting to 80 percent of original working force.

It is evident from the above statements that a great hardship is being invoked upon the uranium-mining industry, which is reflected upon the economy of the entire mining area, through imposition of quotas by the mills which amounted in the above stated examples to less than 30 percent in Marysvale, Utah.

Golden Cycle and Giant Cycle entered into uranium mining in both of these districts, knowing that the ore was low grade but thought that an assured market for the purchase of our ore would be available. It is necessary to work these low-grade ore deposits at a maximum capacity in order to obtain a fair and modest return on our investment, consequently when operating under quotas of 30 percent of our established rate for the last 3 months of 1957, it is most discouraging. We must consider most seriously whether or not to take the additional risk by continuing further exploration and expansion of our mining activities in these districts.

As previously stated, as our companies are affected, so are the other sixty-odd shippers in the Edgemont district and several operators in the Marysvale, Utah, area and other areas which have been shipping to the Vitro mill in Salt Lake City, Utah.

Another problem obtains, in addition to the ones mentioned above where inadequate milling capacity exists in certain areas served by local mills; that is the one facing producers who have no milling facilities within a few hundred miles of their properties such as the Front Range area of Colorado, where high-grade uraninite ores are being produced, in Texas, Arizona, California, and elsewhere, where sizable tonnages of commercial ore have been proven and would be mined if a ready and assured market were available for the purchase of these ores. Mines, prospectors, and producers have been encouraged and requested to continue a vigorous exploration program in their search for additional uranium ore deposits but what individual or company can continue indefinitely to expend large sums of money unless being assured that there will be a ready market for the ores when and if mined?

May we respectfully request that this committee give serious consideration to the following three points as a solution to the present dilemma of the uranium-mining industry.

1. A reaffirmation of the raw material procurement program of the Atomic Energy Act.
2. A further clarification of the administration of the act by the Atomic Energy Commission.
3. Congress shall, if necessary, spell out the intent of the act and support the Atomic Energy Commission's administration of same by making sufficient appropriations of money, to supply a ready market for the purchase of all domestically produced commercial ores.

The above should be done at the earliest possible date, for only after this has been accomplished shall we have a return to the healthy and vigorous uranium mining industry which obtained prior to the October 28, 1957, pronouncement of the Atomic Energy Commission.

Again may I thank the Joint Committee for the consideration and support it has afforded the uranium-mining industry and it is our hope that these hearings will help to solve the problems confronting the industry at present. May I also respectfully request that this testimony be entered into the record of this hearing of the Joint Committee on Atomic Energy.

Thank you.

The CHAIRMAN. The next witness is Mr. Romney, manager of the Utah Mining Association.

Mr. Romney, will you come around, please, and have a seat.

STATEMENT OF MILES P. ROMNEY, MANAGER, UTAH MINING ASSOCIATION, SALT LAKE CITY, UTAH

Mr. ROMNEY. Mr. Chairman and gentlemen of the committee, I am Miles P. Romney, manager of the Utah Mining Association.

I have been engaged a number of years in mining activities of all types, exploration, operation. For the last 6 years I have been manager of the Utah Mining Association, an affiliation of companies, operating companies, in the State of Utah, including not only uranium, but lead, zinc, copper, and other types of mining operations.

We appreciate the efforts of the Raw Materials Division of the Atomic Eenergy Commission to develop a strong uranium-mining industry in the United States.

The laudable concept of maximum possible application of free-enterprise principles to exploration, development, and processing phases of the industry has been applied as fully as possible in consideration of the fact that purchase and use of uranium has been under strict Government monopoly.

I would like to record here our particular appreciation to Mr. Jesse Johnson, heading the Raw Materials Division, for his very fine efforts to implement this type of policy and to see that the operator was accorded the greatest amount of fairness and consideration under Government monopoly of purchase and use.

Such a course has been difficult and has not always produced results of a nature to please all parties involved in the private industry phase of uranium production. But we feel that the Raw Materials Division of the Commission has adhered to that concept in meeting the unusual conditions created by free-enterprise production and monopoly of purchase and use.

We further appreciate the fact that, early in the atomic-energy program, the very great need for supplies of uranium dictated the making of commitments for purchases from foreign sources and the establishing of incentives for the discovery and mining of increased quantities in the United States; and, that as a result of those commitments and incentives the Commission now faces a situation of oversupply in view of present and near future estimated requirements.

We feel it is obvious that there must be some adjustment to the oversupply situation. However it is of paramount importance that the Commission recognize the fact that the vital factor in the oversupply is the very great ore reserve which has resulted from the domestic industry's response to the incentives offered for the discovery and production of uranium.

We urge that maximum possible consideration be given to this fact in the policies and practices and regulations adopted to adjust domestic raw material production to present and near future needs.

In view of the available supply of uranium ore exceeding present and near future Government needs, it is to the best interest of both Government and domestic private industry to promote markets other than those now existing as outlets for domestic production. This involves reexamination of acquisitions of uranium for present and future Government use, promotion of free markets, greater cooperation between Government, producers, and potential users and fullest possible

disclosure of information to assist planning in the raw material production and the potential use phases of the industry.

The proposed limitation of uranium purchases threatens to create certain unequitable and undesirable conditions.

First, those property owners who find they have no market for their ore reserves face continuing financial obligations to hold those reserves. Those obligations may consist of minimum work requirements, minimum royalty payments, property purchase payments, assessment work, maintenance of mine workings, etc. Thus lacking a current market these costs must be added to those already made in exploration, development, and equipment. In time such additional costs could offset any anticipated profit in the ore reserve and end in total loss of investment.

Next, oversupply and uncertainty of future domestic markets will severely limit, if not eliminate, exploration work. It is only necessary to check such activity among the other metals which have become available in surplus quantities in recent years. Lead, zinc, and tungsten are prize examples. Thus the domestic uranium-mining industry, under limitation of markets below the level of economic productive capacity can be expected to liquidate its reserves rather than to maintain or increase them.

We wish to respectfully present a few suggestions which we feel will help to promote equitable treatment among those who have, up to the time the uranium-oversupply situation became apparent, made investments which are secured only by the ore developed and the processing facilities constructed with those investments; will reestablish private industry interest in making further risk expenditures in vitally necessary exploration and development; and will provide conditions conducive to continuity of a healthy, going domestic uranium mining industry.

OPEN, COMPETITIVE MARKETS

In view of the surplus of domestic productive capacity, the seeking and developing of open competitive market outlets for disposal of domestic uranium over and above the Commission's requirements should be encouraged by the Commission and their licensing regulations should be expanded or adjusted to permit such marketing.

The lower cost of domestic uranium should place it in a favorable competitive position to supply the rapidly developing reactor, power production business. The Commission staff could give much valuable counsel to producers seeking to develop such markets. Successful development of open-market outlets in foreign and in domestic areas would serve to relieve present surplus productive capacity, to lower the cost of uranium and to stimulate domestic exploration and development.

Senator PASTORE. May I interrupt at this point, sir. I am curious to know this:

Do the licensing regulations prohibit you from exploring the possibilities of an open market on your own?

Mr. ROMNEY. I would say that it does not prohibit one from exploring the possibilities of developing a market, but it would prevent you from fulfilling that market. You would have to have permission to make sure.

Present licensing provisions would require you to have permission to sell any uranium product, whether it be ore, yellow cake, or whatever it is.

Senator PASTORE. In other words, whatever development you do through your licensing arrangements with the Commission itself, prohibits you from selling this uranium to anyone else on the open market.

Mr. ROMNEY. Yes, sir.

Senator PASTORE. Therefore, your existence depends entirely upon the policies and the activities of the AEC?

Mr. ROMNEY. That is exactly the point.

Senator PASTORE. You are either in business or out of business, depending upon whether they buy it?

Mr. ROMNEY. It is a full monopoly market as far as purchase and use is concerned.

Chairman DURHAM. And other countries permit their companies to ship the ore in here?

Mr. ROMNEY. I am not fully acquainted with the provisions for imports.

Chairman DURHAM. It is coming in under bilateral agreements, of course.

Mr. ROMNEY. You mean they are allowed to ship it into this country?

Chairman DURHAM. Yes. We do not allow it to be shipped out under bilateral agreements, or anything.

Mr. ROMNEY. I think Canada is supplying substantial quantities to Britain and, of course, South Africa is shipping to us. It is a rather recent interesting development that in the case of a property recently developed in South Africa, its production was considered not to be needed over here, so the joint British and American agency released the obligation to supply that production to us and they are now in the position to look for some sort of open market.

Now, they will have to do it under an Atomic Energy Commission counterpart in South Africa. We have recently released some tonnage which was coming to us from Canada, and it is now going to England.

Both of those occurrences suggest that there is pressure to develop some sort of open market for reactor fuel.

It certainly should be the concern of the producers and of the Commission and of this committee to see that our producers are put into a position where they can get the maximum possible benefits from those markets as they open up.

Mr. Johnson recently expressed a strong interest in open markets in a talk made at the Colorado Mining Association convention in Denver.

So open markets are certainly being considered at the present time.

FOREIGN CONTRACTS VERSUS DOMESTIC PRODUCTIONS

Domestic production of uranium offers greater security and also provides larger and more widely spread domestic economic benefits than does foreign production for our domestic use.

They have informally stated it was their policy, but we felt it advisable to comment on it here.

We further urge that the Atomic Energy Commission allocate to domestic producers such tonnage of uranium as might represent shortages in the contracted for delivery of foreign uranium. Shortages resulting from failure to meet terms of those contracts as to specified volumes to be delivered during specified times.

Thus, giving domestic producers the benefit of any tonnage resulting from failure of foreign suppliers to meet contract terms.

FULLEST POSSIBLE INFORMATION NEEDED

Lack of information or appraisal estimates on the long-range needs of the monopoly domestic market for uranium has prohibited long-range planning by the domestic raw-material producer. He has, therefore, proceeded to explore for and to develop ore reserves largely on the basis of good faith in the Commission's precedent-set policy of purchasing any ore developed, which was of amenable quality and grade.

The sudden and largely unexpected limitation policy announcement demanded sudden and drastic reevaluation of future plans.

We feel the Atomic Energy Commission should release and publicize to the fullest practical extent information and data on all phases of uranium production and use, in order that the mining phase of the industry might more intelligently plan its future activities.

Closer cooperation and interchange of information should be encouraged between raw material producers and those engaged in in all lines of consumptive research and consumptive facility installations to afford better overall planning of the industry.

INVENTORY OF URANIUM CONCENTRATE

We understand that there is at present no appreciable inventory of uranium concentrate; that such inventories as exist are either in the form of ore—approximately 3 months' supply for domestic mills—or in the form of enriched uranium and weapons.

A substantial inventory of concentrate, at its present reasonable domestic cost, might be more practical and less costly than inventories of the far more expensive enriched uranium and of military weapons beyond reasonable quantities. These end products could prove vulnerable to obsolescence because of advancements in reactor fuel requirements as well as weapon design.

A substantial inventory in the form of concentrate could serve as a source for quick conversion to enriched uranium fuels or to military weapons as needs dictate. Such an inventory could be acquired at far lesser cost than the higher-priced end products, and such lesser cost would permit domestic uranium acquisition at a higher annual rate than is now planned.

Senator PASTORE. Will you describe what concentrate is?

Mr. ROMNEY. The concentrate is the mill product, or is commonly called yellow cake, sir. It is obtained after treating the ore by crushing, leaching and filtering, ending up with the yellow cake, which is the relatively pure U_3O_8 material that serves as the base for enriched fuels or the metals used in the reactor program and in weapons.

Under the practice of carrying an inventory of concentrate; (1) the present proposed limiting of domestic uranium purchases to current

needs could be increased to limits which would permit reasonable and efficient production rates of the reserves now developed; (2) exploration for domestic reserves to further replace those being mined would be encouraged and the current position of a 10-year domestic supply at projected procurement rates would be maintained or expanded; (3) the independent miner would have reasonable assurance of a market for his production of acceptable quality and grade of uranium ore; (4) obsolescence of the high cost, end products of uranium would be reduced to a practical minimum; (5) overall budgets might thereby not be materially increased or might even be reduced; (6) a substantial inventory of basic material to meet possible future increased needs for weapons, power, or other uses would be available and could be converted in a short time to end products, whereas many years would be required to bring new domestic uranium areas into production through a revived exploration and development program; and that is definitely threatened if we continue under the present limitation policies which practically hamstring exploration for the replacement of reserves being mined out, and (7) a healthy, going uranium mining industry would be assured to the benefit of the domestic economy and the national security.

CONSIDERATION OF CUSTOM SHIPPER

Many custom shippers under the announced limitation policy are faced with uncertainty as to a market for their ore. Physical conditions, overhead and fixed costs related to mining dictate a minimum, economic tonnage-time mining rate. Rates lower than such economic rate force either uneconomic mining of the reserve or costly holding of the reserve for possible future markets. High grading is encouraged under such circumstances; a practice resulting in loss of ore reserves and a greatly reduced return to the mine operator.

Mr. Jesse Johnson has stated that 39 percent of all mill feed in 1957 was custom ore and has estimated a 35 percent portion in 1958. This is a creditable proportion for custom ore considering the tonnage relationship of independent to captive reserves.

However, it is our impression that the proportion of custom to captive ore treatment varies widely from mill to mill by reason of differences in the proportioning provisons in mill contracts and in individual mill management policy.

Mr. Johnson stated that the particular problem of finding an "adequate market" for "those who already have developed ore at substantial expense" is being studied by "our Grand Junction office." The industry, I'm sure, appreciates that recognition of the problem and the concern for its solution.

There seems to be justification for careful review by the Raw Materials Division of the custom to captive proportioning by mills and by areas in order to afford the independent miner maximum practical opportunity to economically mine and market his ore.

Some reasonable increases in tonnage purchases from mills might be made after such a survey, particularly if the acquisition of a substantial inventory of domestic concentrate is favorably considered. As a further measure the Raw Materials Division might be permitted to expand its transportation subsidy in certain cases in order to move

ore mined in one general area to mills in another area and thereby afford relief to independent producers in distress cases.

MAKE POST-1962 PURCHASING PROGRAM OFFICIAL

The "establishment" of a purchase price program from March 31, 1962, when the present purchase price program terminates, to the end of 1966 has been only by announcement of the general terms of that policy by Commission officials in public statements.

We join in the request that the Commission at the earliest possible date clarify the post-March 31, 1962, program by presenting it in detail in the Federal Register in accordance with the Administrative Procedures Act. This in order that the industry might plan future activities and investments on the basis of knowledge of the specific regulations under which that program will operate. Uncertainty grows with the delay in such publication.

CONCLUSION

We realize that some of the above suggested programs to cure problems inherent in the announced limitation policy are not probably consistent with free-enterprise principles in our American intranation economy. However, we wish to reemphasize that only the raw material production end of the industry operates on a free-enterprise basis.

Purchase and use are strictly Government monopolies. The Government offering of incentives to stimulate free-enterprise development of uranium reserves makes no provisions for Government sharing of any losses involved in that development, and we feel that until a free, competitive market can be developed the Government in its position of sole buyer and bearing no risk in raw material production has an obligation to see that amenable uranium reserves, developed with faith in the Government-offered program, obtain a market consistent profitwise with the ore grade and character and the established price for uranium ore products.

Chairman DURHAM. Thank you very much, Mr. Romney. That was a fine statement, and I am glad to see that you offer some solution to the problem. That is what we need in this committee.

Mr. ROMNEY. I appreciate that.

Senator PASTORE. On this matter of failure on the part of foreign countries to meet their requirements under contracts, have you discussed that with Mr. Johnson?

Mr. ROMNEY. I have not, sir. That point came up in the discussion of our group, in which our attention was called to the situation of Government contracts with foreign areas on which delivery has been or is expected to be delayed. As has been testified to before this group, some of our mills have not met production schedules. The purchasing schedule is geared to the contract. If, for example, foreign deliveries are 3 months late, it may involve four or five thousand pounds of uranium concentrate, or uranium in uranium concentrate, that we have failed to get from that source as anticipated. We feel that it would be practical and helpful to simply allocate that delayed tonnage to domestic production. They could increase the permissible tonnage from domestic mills and, thereby, expand treatment of custom ore.

Chairman DURHAM. That is the reason for foreign contracts. At that time, most of them were made on a longtime basis.

Mr. ROMNEY. That is correct. But some of those contracts have not actually come into production as yet, as I understand it.

Chairman DURHAM. That is probably true.

Mr. ROMNEY. The contracts were made a long time ago. I can appreciate that.

Chairman DURHAM. Have you any further questions, Senator?

Senator PASTORE. No further questions.

Senator DWORSHAK. Mr. Romney, I wish to commend you for a forthright informative statement. I know your background as a mining executive, and I am glad to know that you are taking a profound interest in solving some of the problems confronting producers and millers of uranium today.

You have been acquainted with the experiences that the tungsten miners have had during the past few years.

Mr. ROMNEY. Yes, sir.

Senator DWORSHAK. Yesterday I asked a representative of the Wyoming Mining Association if he did not anticipate that unless we are very careful we may repeat the disastrous experiences we had in tungsten. In your statement you point out that apparently we already face what may be considered overproduction of uranium in the next few years.

You suggest that we advocate and promote free markets. At that point I want to ask you this question: What is your thinking on the basis that if we do have overproduction of uranium, beyond the requirements of the Government, what do you suggest should be done to prevent a repetition of this tungsten debacle, where foreign tungsten came into this country at much lower prices, and when the Government no longer purchased tungsten the domestic producers were virtually compelled to shut down their operations?

I am not sure what pressure the price situation will be on uranium, so far as foreign production is concerned, whether those producers can come into this country with their uranium and undersell domestic producers. When you talk about free markets, of course, competitive prices are vitally important. What is your thinking along that line, to avoid this tragic repetition of the tungsten situation, or do you think there is no comparable situation existing between tungsten and uranium?

Mr. ROMNEY. I think there are many things that are comparable, yes. The first is that we have been inclined, as I think the Government has been inclined, as with numerous other metals, to offer firm contractual commitments to the foreigner, whereas the Government program for domestic producers has been on what we might call a precedent-set basis.

In other words, concerning the incentives that were offered for uranium production in this country, the only contract that exists, the only legal obligation to purchase uranium ore is the obligation to purchase 1,000 tons a month of carnotite-roscoelite ore from any one producer at the Monticello Mill in Utah.

There is no contractual commitment to the mine operator outside of that.

Senator DWORSHAK. The indication is there, at least, and the people who have testified here claim that they have gone ahead with exploration, with extensive investments because they understood that the Government was eager to stimulate and expand production of uranium.

Mr. ROMNEY. That is right. Every contact between the Commission and the producer up to the limitation policy was of the nature to encourage more exploration and development for ore on the assumption that if it was a good grade and amenable character he would have a market for it.

Senator DWORSHAK. Do you think we will have too much domestic production in, say, 2 years?

Mr. ROMNEY. I would think that if we should, for some reason or another, be disappointed in the availability of, or in the economics of, some of the uranium reserves on which we are counting so highly, that in 2 or 3 years we would be desperate for uranium in this country.

If all of those reserves, however, prove to be amenable and available, and we are held under a tight limitation policy—Charles Steen hit it on the nose, that a person is a damn fool to go out and explore for uranium under present circumstances—it is only going to take us about 10 years to wipe out the reserve we have, and then we are right back to where we were in 1946. If we are still here to use uranium, we are right back where we were in 1946 when the Atomic Energy Commission had to come out and set up a big incentive program to get the ore developed.

I think the medium course we have to try to work is one which fulfills the moral obligations to the fellow who developed under those assumptions of availability of market, and do it in such a way that at least a medium amount of exploration work is continued.

To get back to just one thing, and I am taking up too much time, on the matter of price and competitiveness in an open market, South African production is residue material.

It is very low-grade material. The principal cost is in the capital investment. Their price is pretty well fixed. It is higher than ours. Our average price has been going down year by year. South African actual cost is higher than ours. I understand that Canada's cost is also higher than ours, because of lower-grade ore and a greater commitment of manpower and capital cost per unit of final product. So I believe that under our present circumstances, we are in a position to probably benefit from the opening of a free worldwide market, if we had free access to that market.

Senator DWORSHAK. Do you think AEC should renew contracts with foreign producers of uranium which may expire?

Mr. ROMNEY. I do not. In the statement we specifically state that we feel they should not be extended in either time or volume, and that no new contracts should be made.

Senator DWORSHAK. Do you reach that conclusion on the basis that you are reasonably sure we can produce enough uranium in this country to meet the requirements of the Government and any other possible uses?

Mr. ROMNEY. That plus the fact that you have firm commitments up to 1966 for given volumes of foreign material. That plus our domestic ability to produce gives us plenty.

Senator DWORSHAK. And you still do not visualize the possibility of overproduction of uranium in view of the foreign contracts in effect prior to 1965 or so?

Mr. ROMNEY. There is an overproduction visualized right now. But I say so far as the foreign production is concerned, it is a contractual commitment. Unless the Government should be in the fortunate position to be able to go and renegotiate those downward, somebody has to take the adjustment, and it is apparently the home producer.

Senator DWORSHAK. Didn't we have the same trouble with other minerals in World War II that caused a great deal of distress to our domestic producers of minerals?

Mr. ROMNEY. Our domestic mineral producers under the precedent of handling—I was going to call it policy—mineral matters, are learning that every time an oversupply situation develops the domestic producer has had to make the curtailment, and it is apparently the same in this case.

Senator DWORSHAK. You hope that does not eventuate in uranium?

Mr. ROMNEY. I hope that does not eventuate in squeezing our domestic uranium out of the picture.

Senator DWORSHAK. Thank you.

Chairman DURHAM. Thank you.

Senator Watkins from Utah is with us this morning.

Senator, we would be glad to hear from you now, if you wish to proceed.

STATEMENT OF HON. ARTHUR V. WATKINS, A UNITED STATES SENATOR FROM THE STATE OF UTAH

Senator WATKINS. Thank you, Mr. Chairman. I hope I will not take more than about 7 or 8 minutes.

Mr. Chairman, the search for uranium in western America during the past decade has been one of the most successful resource development programs in our lifetime.

Back in 1948, as you members of this important committee well know, we were a "have not" Nation so far as uranium ore was concerned—utterly dependent upon Canada and the Belgian Congo for the raw material for modern weapons and for a new energy source. Fears of the security of vital supply lines of uranium ores were very live indeed.

Then the Atomic Energy Commission, armed with authority and funds granted by the Congress, stepped into the picture with incentives for the American prospector and miner. Soon the hills of the Colorado Plateau were alive with prospectors in the greatest minerals rush of this century. This tremendous minerals search extended until it covered the entire West, and today we are producing uranium in several States and plagued with fears of an oversupply instead of ore shortages.

In my opinion, this fear of an oversupply of uranium is purely temporary. I fully concur with estimates made by AEC officials that the long-range prospects for this vital energy source material are good. But we do face difficulties in the immediate transition period, and I am pleased that this committee, as well as the AEC, is studying what should be done to protect the interests of the men who

did the "impossible" and made us essentially self-sufficient so far as our short-term needs for uranium ore are concerned.

As a representative of the great State of Utah, I am particularly proud of the role played by Utah prospectors and miners in this tremendous uranium rush.

Some of the greatest ore strikes in the world have been made in the State of Utah. One of them, Charley Steen's MiVida mine in San Juan County, Utah, is a landmark in domestic uranium self-sufficiency. Miners in my part of the West discuss uranium in terms of "B. S." and "A. S." (before Steen and after Steen), so important was his discovery.

And I am proud, too, that Charley Steen refused what must have been dazzling offers to sell out, and he remains today an active mine and mill operator, and serves as president of the Utah Mining Association.

Conditions faced today by the uranium prospector and miner in Utah and elsewhere in the West are being outlined by three competent representatives of the industry, here to testify at these hearings.

Miles P. Romney, manager of the Utah Mining Association and one of the most highly respected and widely known mining authorities in the West, has discussed the situation faced by the industry in Utah and also by the industry elsewhere.

I trust that this committee will weigh carefully his well-reasoned recommendations.

Clark Wilson, of Salt Lake City, a former vice president of the Utah Mining Association, will discuss the problem faced by his mining company. He represents a lead-zinc firm which was forced by our free trade policies to diversify its lead-zinc operations. His company helped develop large reserves in the State of Washington, and now finds itself without an adequate market.

This is an example of a firm twice handicapped by Federal policies—first with lead-zinc and now with uranium. May I say when I mention "firm," perhaps the companies and subsidiaries involved have been under different names, but they have been the same people in most cases in this Utah-Washington operation.

Allen Elggren of Salt Lake City testified yesterday, I believe, on the problems of a company which helped develop the rich uranium ore deposits of Wyoming, and then found themselves without authorized milling facilities to help develop the full potentiality of their ore deposits.

At yesterday's session, I understand, Senator Barrett, of Wyoming, also testified, offering a concrete suggestion on how to solve the present uranium problem. Senator Barrett proposed the "Barrett plan," providing for an orderly domestic expansion program through 1967. He proposed creating a stockpile of uranium concentrates between 1959 and 1962, and then reducing the stockpile in 4 years after 1963, when present purchasing commitments end for Canadian ore imports.

Under this proposal, domestic milling capacity can be expanded 7,250 tons between 1959 and 1967, without interfering with our present foreign contract commitments.

Mr. Romney, I understand, has made a suggestion along the same line in his statement today. He has proposed building up an inventory of processed ores, without going into details which your committee can provide on the basis of hearing testimony.

I strongly endorse these suggestions in principle. Concentrates of uranium ore can be stored at little expense and with virtually no loss through shrinkage or storage. Furthermore, by storing ore concentrates, we will be spared the immediate expense of producing fissionable materials, a cost that equals the expense of production and processing of the primary core. At present, I understand, we have virtually no inventory, or stockpile, of concentrates.

An excellent discussion of this general problem was made in an article in the Salt Lake Tribune of Sunday, February 23, 1958. This article was written by Robert Bernick, business editor of the Salt Lake Tribune and one of the recognized authorities on uranium mining in the West. I hereby request permission of the committee to introduce his article into the record as a part of my remarks.

Chairman DURHAM. Without objection, that may be done.

(The document referred to follows:)

[Salt Lake Tribune, February 23, 1958]

WEST TO PUT U-WOE IN CONGRESS HAMPER

(By Robert W. Bernick, business editor)

Congress will hear firsthand Monday and Tuesday that all is not well with the uranium industry in the United States.

Not since the initial days of the uranium boom—when the Government under emergency conditions established a domestic A-ore program—has such an important airing of the industry's raw-materials position been held.

This session is before the Congressional Joint Committee on Atomic Energy. Prominent uranium men from the West, along with area congressional leaders will appear. Representing the Utah industry will be Miles P. Romney, manager of the Utah Mining Association.

The meeting will deal with an industry that finds itself being limited as to its expansion, cutting back almost completely on exploration and facing a somewhat questionable market after March 31, 1962. And while some companies in the business hold contracts for the next 3½ years promising an excellent cash flow in this period, others complain that:

1. Atomic Energy Commission policy as presently constituted favors foreign producers of uranium as to both price and contract length.

2. The policy, while having assured the Nation of a full supply of fissionable material for the next decade, also is assuring little or no new reserve development in the interim. Thus the program will have a tendency to run at full blast, then end with an abrupt shutdown, much as was the case of the ill-fated domestic tungsten development in the West. The country will then have no continuity in mining and development of domestic sources of uranium ore.

3. While the AEC has only a "legal" obligation to buy 1,000 tons a year from any one producer of carnotite-uranium ores deliverable at Monticello, it has been assumed in both announcements and practices the moral obligation to purchase on open-end basis all amenable uranium ores and concentrates at competing prices in the United States. The Government, it is noted, established absolute ownership of fissionable materials in the United States in this connection. There is no free market.

4. Commission policy has resulted in "picking and choosing" among which operators and districts will receive full development in this period and which areas and operators will not.

5. Commission policy is freezing present operators in a role of raw materials development, preventing others from entering the field.

6. The moratorium on new mill construction placed into effect by the AEC will result, if continued, in a substantial loss to some operators who have developed large, new reserves lacking a present market.

7. Present mine and mill policy is resulting in high-grading of uranium deposits which is wasteful of a valuable fissionable material.

8. If allowed to continue on its present path, the program will result in serious hardships to certain areas of the western United States. Four States are principal producers of United States uranium—New Mexico, Wyoming,

Utah, and Colorado. There also is production in South Dakota, Washington, Oregon, Arizona, and Nevada.

In Utah some 2,500 persons are directly involved in uranium mining and milling. Last year, the industry was second only to copper in gross value produced. That gross is estimated at more than $65 million and it is projected that gross value of uranium concentrates produced in 1958 will be more than $80 million.

This may be compared with the 170 million gross of Utah's copper industry, 40 million by coal and 30 million by iron ore for Utah Steel.

The development of uranium has resulted in new highways, roads, public schools, hospitals, along with expansion of educational, recreational, and tourist facilities in several areas of Utah. This might never have come about without the new raw-materials industry. Yet much of this expansion is in terms of public debt which still must be repaid from public sources.

FOUR URANIUM MILLS IN UTAH

Utah has 4 uranium mills, 2 in San Juan County and 1 in Grand County and a fourth in Salt Lake County. Uranium mining is important business in San Juan, Grand, Emery, and Piute Counties. Production also comes from Wayne, Garfield, Uintah, and a few other areas.

WHAT IS BEHIND THE AEC'S SLOWDOWN ON URANIUM EXPANSION?

Men in the industry report that first, the Commission has "bumped its head" on its budget. It will be spending $700 million annually on acquisition of uranium concentrates, of which amount $300 million goes to domestic sources and $400 million on foreign contracts, some of which extend to 1966.

Additionally, nearly $600 million more will go for production of enriched uranium products. A total of 18,000 tons of uranium concentrates from domestic sources and about 22,000 tons of concentrates from foreign areas are contracted for annually in years ahead. This 40,000 tons of uranium concentrates, under present plans, will be processed into fissionable materials.

The bulk of the AEC's budget apparently is being committed for feed materials in one form or another for reactors.

However it is also apparent that at this particular stage of developments, the armed services and the peaceful uses of the fuel have not caught up with supplies of available material.

WHAT IS THE SOLUTION?

There is some division of opinion among principals in the industry and possibly within the staff of the AEC on this.

One group in the United States would like to see a huge public works program geared to nuclear energy which would place the Federal Government in the public power field. This would satisfy the pent up productive capacities of fissionable materials both here and abroad and would accomplish the socialization of the privately owned electrical power industry in the United States.

GOVERNMENT "IN"—PRODUCERS "OUT"

Not many in the uranium industry advocate this—if for no other reason than the fact that the socialism eventually would catch up with them, the Government would be in and they would be out of the mining business.

In any event, this certainly would magnify and not reduce public spending for nuclear energy which now exceeds the $7 billion mark, they believe.

A group from New Mexico is advocating a type of "soil bank" for the uranium miner. Under this plan, he would be paid a portion of the value of uranium discovered, and developed. When eventually mined, he would receive other funds.

This plan, too, would require appropriations above the level now projected.

A third proposal is that the Commission stockpile uranium concentrates rather than send them through gaseous diffusion plants for conversion to enriched materials or metals for a reactor use not demanded by the present stage of development.

By cutting production of uranium metal by one-half, a "saving" of several hundred millions could be made in the present budget of the Commisison. It is then proposed that funds thus saved be allocated to increase purchase of con-

centrates from United States sources. The figure of $150 million a year is used in this connection.

Adding 150 million to purchase of uranium concentrates in the range of $8 a pound, several thousand more tons daily of uranium ore capacity could be established in new mills. This would aid in reducing the inequities involving mill capacity for Wyoming's Gas Hills District and in certain areas of New Mexico's Ambrosia Lake District.

OTHER MILLS LOOK FOR ASSURANCE

Other mills in Utah and Colorado also need assurances of a program past March 31, 1962. This may require commitment of additional funds for concentrates purchasing as well as a "stretch out" of existing contracts. Such a program would bring a welcome stability to many communities in Utah and Colorado.

Actually the Commission has "announced" that between March 31, 1962, and December 31, 1966, it would buy 500 tons of concentrates from any one property. But this proposal never has been defined adequately. And some in the industry say this program actually could result in much larger appropriations for concentrates purchasing than presently conceived by the Government.

It is important to note that the industry is looking forward toward a near date when nuclear-powered steam-electric generating stations will be fully competitive with electrical production from fossil fuels.

There also is an indicated wider use of uranium fuels in such armaments as space ships and vessels traveling under and on oceans of the world.

There also are foreign markets to be considered.

But insofar as this session of Congress is concerned, it appears there either must be added appropriations or a shift in funds within the AEC's raw-materials program.

Senator WATKINS. In addition, I also request permission to introduce into the record a letter which I received from the AEC on December 23, 1957. This letter discusses the matter of uranium imports, disclosing that ores can be purchased for inventory or stockpile from domestic producers at favorable rates compared with the price which must be charged for foreign ores.

Chairman DURHAM. Without objection, that will be done.

(The letter referred to follows:)

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington, D. C., December 23, 1957.

Hon. ARTHUR V. WATKINS,
United States Senate, Washington, D. C.

DEAR SENATOR WATKINS: Your letter of December 3, 1957, to Mr. Strauss requests unclassified information pertaining to quantities and prices of uranium imports from Canada and other countries during the next few years as forecast in terms of annual dollar value in the recent statement to the Joint Economic Committee to which your letter makes reference.

Imports from Canada are expected to be on the order of 10,000 tons of U_3O_8 in the current fiscal year and thereafter at a rate of 13,000 to 14,000 tons of U_3O_8 annually until March 31, 1962. Some of our Canadian contracts extend to March 31, 1963, but the major portion of contract quantities deliverable during this additional period will be purchased by the United Kingdom in accordance with an agreement to which the United States, Canada, and the United Kingdom are parties.

Prices for Canadian material are negotiated prices based on estimated costs of production and varying as to each source. The Canadian Government as yet has made no public disclosure of the prices fixed by our contracts and under the circumstances we have no choice but to hold specific information on prices in confidence until released by the Canadians. On the other hand, we have recently made public information concerning average prices paid by the Commission for foreign uranium concentrate. In a speech delivered before the Atomic Industrial Forum meeting in New York in October 1957, Mr. Jesse C. Johnson stated that the average price to be paid in United States dollars for foreign concentrate in fiscal 1958 is estimated at $11.15 per pound of uranium oxide and in 1959, at $10.70 per pound.

By comparison, the average price the Commission will pay for domestic concentrate in the current fiscal year is estimated at $9.60 per pound of U_3O_8. The lowering of the average domestic price in recent years reflects lower milling costs resulting from metallurgical advances and larger mills.

Imports from other foreign sources are estimated at about 5,500 tons of U_3O_8 for fiscal 1958. In ensuing years the annual rate is expected to decline gradually to around 4,600 tons in 1962. As in the case of Canada, the supplying countries have not made public the prices they receive for uranium concentrates and we are not in a position to release figures on individual prices until they are released by the countries concerned. The estimated average prices applying to overall AEC purchases of foreign concentrate in fiscal years 1958 and 1959 have been mentioned above. We have no objection to public dissemination of these figures together with the forward estimates we have given of imports from Canada and other countries.

A major factor in the higher price for foreign uranium concentrate is the lower grade of the ores. Domestic ores average approximately 5 pounds of uranium oxide per ton. Canadian ores average about 2 pounds per ton, so that 2½ tons of Canadian ore must be mined to obtain the same product as 1 ton of domestic ore. In the case of South Africa, recovery averages only half a pound of uranium oxide per ton. Most of the South African uranium is recovered as a byproduct in connection with gold-mining operations. Otherwise uranium could not be produced from South African ores at present prices.

As you may know, our domestic production presently is at the rate of 10,000 tons of U_3O_8 a year. We expect it to reach a rate in excess of 15,000 tons a year during 1959.

All the materials imported are in the form of concentrates and are fed directly into the Commission's refineries at Fernald, Ohio, and St. Louis, Mo., in the same manner as domestic concentrates.

Sincerely yours,

K. E. FIELDS, *General Manager.*

Senator WATKINS. This factor should lead to favorable consideration to the proposal by Senator Barrett and Mr. Romney for an inventory buildup of domestic concentrates during the present transition period in domestic uranium mining.

Thank you for considering these views of a westerner vitally interested in the welfare of the domestic uranium mining industry. Please be assured that I believe the Government has a moral obligation, as the exclusive buyer of uranium, to make an effective transition from a Government-controlled market to a free market for uranium.

Furthermore, we have a responsibility to those prospectors and miners who responded to the Government's pleas for assistance in the important search for domestic sources of uranium. We cannot, morally, let down the individuals who helped discover and build processing facilities for these vital ore reserves—especially for reserves developed up to the AEC's limitation order issued last fall.

Mr. Chairman, I deeply appreciate this opportunity to present these brief views. I am not expanding them to go into any detail, because the men from my State and other experts from the West have presented them or will present them so ably that it would be like me trying to gild the lily if I attempted to do it.

I do not claim to be an expert in this field, but I have been deeply interested in the mining development of the West ever since I was a lad, when my dad used to work in a hard-rock mine in Park City, Utah, one of the great mining districts of the West.

Chairman DURHAM. You come from a great mining State. I do not pretend to know all about uranium myself. But it looks like you go from rags to riches and then from riches back to rags in some of these mines and minerals.

The Senator just spoke about tungsten. Lead and zinc are the same way. I hope we on Capitol Hill have brains enough to solve the problem and not have some of the events repeat themselves.

Senator WATKINS. I believe you have expressed it far better than I can do. I sincerely hope that the committee will be able to take the practical suggestions that have been made and work out a program that will help us and permit us to keep faith in these people who have spent a lot of effort, and sometimes with a great deal of hardship, in the development of the sources of uranium in this country.

It is a very rugged country where they have been prospecting. In my State, it is one of the most rugged parts in the West.

Chairman DURHAM. I believe they have done an excellent job in delivering these supplies to the AEC.

Mr. Johnson is a fine man to handle the job. But this is one of the things that has come along, and we have been caught in this fix.

Senator WATKINS. Well, there is one thing certain; the discovery of uranium has opened up a vista which will probably account for one of the greatest developments in the history of mankind and we certainly ought not to have any reluctance in going ahead with the program when we know the great possibilities that have come to us.

Chairman DURHAM. I know we have had the wholehearted support of the Senate and the House since the inception of this, and I believe we will continue to have it. We have confidence in this.

Senator WATKINS. Thank you very much, Senator.

Chairman DURHAM. The next witness, I believe, is Mr. Clark Wilson, vice president of the Northwest Uranium mine.

Senator JACKSON. Mr. Chairman, before Mr. Wilson makes his presentation, I would like to have included in the record at this point a letter addressed to the chairman of the committee from the president of the Northwest Uranium Mines, Inc., with headquarters in Wallace, Idaho.

Chairman DURHAM. Without objection, that will be placed in the record.

(The letter is as follows:)

NORTHWEST URANIUM MINES, INC.,
Wallace, Idaho, February 17, 1958.

Hon. CARL T. DURHAM,
Chairman, Joint Committee of Congress on Atomic Energy,
Washington, D. C.

HONORABLE DEAR SIR: Our company, the Northwest Uranium Mines, Inc., respectfully requests permission through our Senator, the Honorable Henry M. Jackson of Washington, to submit to your committee the following brief statement of facts in support of a needed milling facility for discovered uranium ore in the Spokane Indian Reservation of eastern Washington for the benefit of our company and other producers in the area similarly situated.

Our statement will be brief and to the point. A substantial uranium discovery was made in June 1955 on the Spokane Indian Reservation by the Northwest Uranium Mines, Inc. The Defense Mineral Exploration Administration participated in the drilling program and declared a formal discovery. Through royalties from production we became obligated to reply approximately $350,000 downward to whatever the final milling results amount to.

By the spring of 1956 we had an estimated reserve of 1,500,000 pounds of uranium in this ore body and at authorized prices would have a $15 million gross value. This ore body was discovered through the efforts of several consolidated companies over a period of 2½ years, at a cost of around $350,000; and there are approximately 3,000 stockholders, most of whom reside in the

State of Washington and other Northwest States who furnished a substantial portion of these funds.

This is a "small-business venture" which reached its objective after following and accepting the Atomic Energy Commission's specific pledge and promise with the hearty endorsement of Congress and the President to the effect that the Government would buy all the uranium ore offered in detailed schedules outlining acceptable grades and prices to be paid, until March 1962. These promises were issued and repeated over and over again.

Contrary to the Government's solemn pledge, and very unexpectedly to uranium producers, the announced change of policy in October leaves us with no market for practical purposes, with nothing more than a token custom tonnage arrangement placing our company in a desperate situation. There is no assured way we can repay for mining the ore, or for the capital of $350,000 invested in the project to begin with.

We have made repeated requests in personal interviews before the Commission at Grand Junction and in Washington, but have made very little progress. We have, however, been advised that the Operations Office is making a survey of the problem in various areas resulting from the action limiting procurement and that this report will be made to the Washington office in due time. Nevertheless, our company is at practically a standstill and we need assistance.

Grand Junction Office led us to believe a plan would be authorized.

Upon drilling out a substantial ore body and checking values, negotiations were undertaken with the Atomic Energy Commission at Grand Junction to process the deposit and the first discussion took place on January 3, 1957, at Grand Junction with Mr. Allen E. Jones, manager. There were also present Clark Wilson and Robert R. Porter, consultant metallurgist of Salt Lake City. The agency seemed interested in the company's plan and suggested we obtain more data and information for further conference.

On March 11, 1957, the matter was again taken up with the Grand Junction Office with additional data submitted, and it was indicated that several possibilities were available for a high-grade, yellow-cake concentrate of our upgraded material by mills already under contracts, such as the Dawn Co. at Ford and the Vitro Co. at Salt Lake.

Several telephone contacts were made with the Grand Junction office and on June 6, 1957, another meeting was held in Salt Lake City with our consultant metallurgist, Mr. Porter, and Mr. F. W. McQuiston, Jr., chief metallurgist of Newmont Mining Corp. of New York City, which company owns 51 percent interest in the plant at Ford, Wash. Mr. McQuiston had visited Mr. Allan Jones at Grand Junction and advised us that our plan of upgrading the ore was of definite interest to the Atomic Energy Commission, as stated in a conversation with him; and that he was on his way from his New York office to Ford, Wash., to discuss the above AEC suggested ion exchange arrangement for our material.

Subsequent telephone calls and contacts were made, particularly on June 24, July 12, July 23; and again on July 31, 1957, Mr. Clark Wilson visited AEC's headquarters in Washington, D. C., and discussed the situation with Mr. Jesse C. Johnson, Director of Raw Materials. The Commission expressed interest in our project but was not prepared to give us a price at that time. On August 6, Mr. Jones, manager at Grand Junction, suggested that we continue negotiations.

Several other contacts were made by telephone on August 7, August 16, and August 19; and on September 23, 1957, our company's officials visited Grand Junction and had a conference again with Mr. Allan Jones, at which time it was indicated that our metallurgical process resulting in a request for only $10.46 per pound for yellow-cake uranium was the most reasonable offer submitted, considering the grade of the ore.

We were unable to get a contract from the AEC, but it was suggested that the Northwest Uranium Co. submit a new plan to include the ion exchange unit and submit a new cost analysis. Thereafter, on October 9, 1957, the company submitted a summary of costs at $10.11 per pound, which included all supplemental tests and cost data.

Since that date we have been unable to accomplish anything beyond a statement that no additional mill facilities were to be authorized.

GENERAL STATEMENT

The Atomic Energy Commission has at all times been informed of the company's efforts to find uranium. In the drilling program during 1956 we received cooperation and encouragement from the Atomic Energy Commission to develop this particular ore body. This is a low-grade ore body compared to some districts, but our company felt the Commission was very interested in the fact that mineral technology generally results in the utilization of continually lower grade ores and this particular ore body would be the test of the feasibility of such an operation.

After we completed all our testing and functions of the plant were established to successfully process the ore, the Atomic Energy Commission informally stated that the prices our company requested for the sale of its product ($10.46 per pound) was a most reasonable request.

The upgrader and/or mill plant designed by our company was refused by the AEC after 2 years of work had been spent upon it. The Atomic Energy Commission informed us that they preferred not having two mills in the area. They authorized us to take up negotiations with the Dawn mill at Ford, Wash., and stated that the Dawn plant could be expanded to handle the ores from our property.

Atomic Energy Commission now refuses to expand Dawn mill.

After repeated conversations and further discussion with the Dawn Mining Co., and following a trip to Grand Junction by its general manager, Mr. R. B. Fulton, in behalf of our request to accept our ore for milling, we were advised substantially as follows:

AEC will not consider at the present time extending its commitment for the purchase of additional pounds of U_3O_8 in concentrate at prices in excess of $8 per pound in existing contracts.

In effect, it refused our company any opportunity to process this uranium mineral deposit except through a slow, unreliable custom basis, along with other producers in the area, where maximum custom capacity would not exceed 100 tons per day. This refusal amounted to a complete breakdown in negotiations with the Dawn Mining Co. and was another example of the vacillating policy of the agency in regard to this matter.

It amounts to the United States Government, our Government, acting through the Atomic Energy Commission, going back on its specific word to buy acceptable grades of ore until 1962.

We respectfully submit to this committee that the Northwest Uranium Mines, Inc., is entitled to a market for at least a minimum of 392,000 tons of ore under Atomic Energy Commission Schedule 5, price protection. This can be accomplished by (*a*) the Atomic Energy Commission voluntarily expanding the yellowcake poundage and the tonnage limitations of Dawn Mining Co., Ford, Wash., contract so as to cover Northwest's 392,000 tons of ore to be mined and milled and which will produce 1,250,000 pounds of uranium; (*b*) to increase the capacity of the Dawn Mining Co.'s mill by adding certain additional units at the nominal cost of about $250,000 so that all ores can be processed by 1962; or in lieu of the above, Northwest's ores could be processed (*c*) by extending the AEC Schedule 5 to cover Northwest's ore bodies beyond 1962 for a period of time equal to the amount of time lost (2 years) while AEC was having us work on the upgrading process, the special metallurgy involved, and furnishing the results to the Commission and which data is not now being considered.

We hope the committee will give vigorous attention to our problem and all others similarly situated who relied upon the Government's promises to purchase this newly found mineral discovered at great expense and hardship for the benefit of the country and national defense.

Respectfully submitted.

NORTHWEST URANIUM MINES, INC.,
By F. E. SCOTT, *President.*

Senator JACKSON. Their properties are located, however, in the State of Washington.

And also a letter from Mr. Harwood J. Tibbits, president, Dahl Uranium Mines, of Spokane, Wash.

Chairman DURHAM. Without objection that will be done.

(The letter is as follows:)

DAHL URANIUM MINE, INC.,
Spokane, Wash., February 17, 1958.

Hon. HENRY M. JACKSON,
Senate Office Building, Washington, D. C.

MY DEAR MR. JACKSON: It has been brought to our attention that there will be a hearing in Washington, D. C., February 24, 1958, to consider the present Atomic Energy Commission's milling position.

Not being able to attend the meeting to represent our stockholders, I wish to express my thoughts for your consideration on this problem prior to this hearing.

It is my conviction the time has arrived for the American system of doing business to take over as far as possible and the following suggestion might be a satisfactory solution to the problem.

It is suggested that a new Commission be established which would have complete and absolute control of all free world production, present and future, of all ores of uranium and the milling thereof. This Commission could work with the Atomic Energy Commission as to the needs of private industry for uranium. The proposed Commission's membership should be appointed and the selection should be equally from small and large producers of uranium.

Because of a number of factors that have arisen in the uranium industry, the present position of all producers is chaotic and demoralizing. Milling capacity is inadequate in the Pacific Northwest and overbuilt in other areas.

In the Big Indian Wash of Utah, as an example, I feel that the present milling arrangements should be changed so that the present mills would have to mill all mined ore from their area on a pro rata basis similar to the method now in operation within the petroleum industry.

In areas that are relatively new or completely new, such as eastern Washington, the same production-control basis could be used with the exception that a new milling facility could be approved by this new Industry Commission if private industry could prove adequate potential production. With only 1 mill in this area, limited total independent production is limited to 2 tons per day for all producers and this tonnage is not economical for just 1 producer.

I understand that the AEC now have contracts with present mills for the production of all the yellow cake they need or are authorized to purchase. If this is true, we could still have new milling facilities and still not have overproduction of yellow cake by setting up this Industry Commission that would issue monthly quotas for all mills. This could be handled exactly as the railroad commission of Texas handles crude-oil production. The present mills are mostly owned or controlled by large companies and are in a complete monopoly position sanction by the United States Government.

It would be to the best interests of all the people of this country and its allies to have diversified milling capacity and develop potential areas not only for military use but for industrial uses.

Another major problem is the guaranteed price structure that has been adopted and publicized by the United States Government. Many hundreds of thousands of small private investors have placed their money in uranium mining because of Government guaranteed prices. In actual effect, however, by not authorizing new milling facilities where needed and not purchasing present mined ore, the AEC has repudiated the guaranties.

We need a sound, clarified policy by the Atomic Energy Commission that will allow the small investor a chance to get a return on his invested capital. The uranium industry's production should be controlled by the laws of supply and demand even under Government complete control.

The AEC should have more funds appropriated for the development of the uses of uranium and for research of new potential uses. Uranium is one of the two greatest energy materials we have yet found. If we are to conquer outer space we need a constant fuel available for many months' time without refueling. Present missile fuels are a far cry from the potentials of atomic fuels.

We have proven the marvels of atomic power in our new submarines. We have had the benefits of Madame Curie's lifetime work in curing diseases, but we haven't even started to develop the many uses of uranium for industrial or scientific use.

Your help and support to get the Atomic Energy Commission the necessary funds and the proper and fair method of production allocation for all mines and mills, will be a real service to the American people and a promising new industry.

Sincerely yours,

HARWOOD J. TIBBITS, *President.*

Chairman DURHAM. Mr. Wilson, you may proceed.

STATEMENT OF CLARK L. WILSON, VICE PRESIDENT AND GENERAL MANAGER, NORTHWEST URANIUM MINES, INC., SALT LAKE CITY, UTAH

Mr. WILSON. Mr. Chairman, before giving my few remarks, I would like to say the same thing as others, that we do appreciate the treatment we have had from Mr. Jesse Johnson and the staff. We hope the Commission policy will be adjusted to take care of some of these particular problems, such as ours.

The economic future of our company has been drastically affected by the recent changes in AEC policy regarding contracts for purchase of uranium concentrate. I would like to briefly present our company position to your committee and propose the policy that we recommend for adoption by the Atomic Energy Commission in our case.

I will also discuss the events leading to our situation.

PRESENT POSITION AND PROPOSED REMEDY

Northwest Uranium Mines, Inc., is a small independent organization owned by approximately 3,000 stockholders scattered throughout the United States, with concentration of ownership in the States of Washington, Utah, and Idaho.

The corporate office is at Wallace, Idaho, and exploration activities are concentrated on ground leased from the Spokane Indian Tribe approximately 50 miles northwest of Spokane, Wash.

The present company is a result of merger with three other companies interested in uranium prospecting. It represents 4 years of concentrated effort by the present management to help develop a successful uranium operation in this country. We have carried on extensive exploration in nine of the Western States. This work resulted in the discovery of a large ore reserve on the Spokane Indian Reservation in the fall of 1955.

We have diligently pushed a program of exploration to develop this ore reserve, completed the necessary metallurgical testing, prepared a concentrate flow sheet designed to produce high grade U_3O_8 concentrator together with cost estimates, made arrangements for surface leases for building and tailing sites and arranged for power and water.

We also had preliminary commitments for financing the construction. Negotiations were well along with the Raw Material Division for a contract on the production of this concentrate and we were informed that the Commission would rather have our ore processed through the recently constructed mill of the Dawn Mining Co., at Ford, Wash.

It was suggested that we negotiate with the Dawn Co. and report back to the Raw Materials Division. We were assured that the Division wanted to provide a market for our product.

Negotiations with the Dawn Co. indicated two alternatives:

1. We could be a regular custom shipper entitled to a minimum daily tonnage of 5 percent of their rated capacity or 22 tons per day—provided there were other customers, or a maximum of 25 percent of their capacity or 110 tons per day if we were the only custom shipper.

This latter situation would mean a maximum annual production of 40,000 tons of ore could be milled from our property for a total of 160,000 tons during the 4 years remaining under the present AEC Circular 5 prices.

There are other uranium shippers in this area so it is very doubtful that we could be guaranteed their full custom capacity. In submitting our data for a concentrator to the Commission we indicated our ore reserve of 603,000 tons of 0.124 percent U_3O_8 and requested a minimum purchase contract of 1,200,000 pounds. I might say that additional work increased that tonnage by another 100,000 tons.

Under the mining proposal discussed above we must "high grade" the ore deposit and leave half the uranium in the ground or stockpile it as low grade at additional expense to us.

This is certainly not conservation of resources and will not provide the return to our company that we deserve. In fact, this type of operation is questionable as the stripping ratio of waste to ore increases with a corresponding increase in mining cost. We feel that Northwest is entitled to a better market situation than this as our exploration and Commission negotiations for the concentrator are based on the policy in effect that concentrate purchase contracts were being given to those who had an adequate ore reserve and had plans for treatment and financing.

One additional point, we feel that the mining operation described above cannot continue after March 1962 as we don't know if the Dawn Co. can sell any concentrate and we will be losing the haulage and development allowances. Our ore must be hauled 20 miles to the mill. We propose to build our mill at the mine.

2. The second arrangement with the Dawn Co. might be a participation in their milling operation provided adjustments can be made in their present purchase contract.

It is my understanding that with a limited additional capital investment of approximately $300,000 or less their mill capacity can be increased by at least 100 tons per day.

However, we propose that the Commission amend the Dawn contract as follows to provide facilities for milling at least 392,000 tons of Northwest ore.

(1) Extension of the total number of pounds of U_3O_8 as concentrate which Dawn may deliver to the Commission at its contract price.

(2) Amortization by AEC of expended milling facilities for accommodation of Northwest ores.

That would be the approximate $300,000 investment.

(3) Revision of existing milling tonnage limitations and contract termination date.

(4) Application of circular 5 prices to ores processed under the proposed agreement between Northwest and Dawn subsequent to the announced expiration date of the program—March 31, 1962.

We feel that this program is justified and equitable for the following reasons.

(1) As I have indicated and will explain later we feel that Northwest has some equity under the past practices of the Commission since our efforts were all initiated and developed under that policy and the Commission was fully informed of our work.

(2) The Commission will obtain concentrate at a reasonable price with the minimum of capital investment repayable through amortization. This will eliminate the construction of new milling facilities in this area as per Commission policy.

(3) Northwest can participate in earnings from mining and milling and will be able to produce a maximum quantity of product from the deposit at more reasonable unit costs. (Stripping ratio will be reduced—overhead will be spread over more units—mining will be less selective.) As a result of this operation the Spokane Indian Tribe will receive a sizable royalty and Northwest will repay a DMEA exploration loan.

EVENTS LEADING TO OUR SITUATION

Our Northwest Co. is typical of a small mining business that must proceed in orderly maner of exploration and invest its finances wisely. We have not engaged in a "crash program" to develop this ore body as we felt there was a stable policy for allowing concentrate purchase contracts as practiced by the Commission during the past few years. At the same time we have diligently continued with plans on mining, milling, and financing.

We also have had some pioneering to do: (1) after finding the radiometric anomaly on the Spokane Reservation we had to negotiate with two Indians for assignment of their prospect permits to Northwest. The tribe decided to issue new prospecting rules and we did not receive our permit until October 25, 1955. An unusually heavy snowfall that winter limited work until the summer of 1956, (2) the ore reserve was drilled out during the summer and fall of 1956 under DMEA loan program and we received one of the first Spokane tribal mining leases in February 1957.

Arrangements were made with Mr. R. B. Porter of Salt Lake City, Utah, for the necessary metallurgical testing and design of a flow sheet.

The drilling program indicated a large tonnage of ore with a grade lower than that in other districts but it could be mined by a low cost open pit method and Mr. Porter felt it could be upgraded very cheaply to produce a low-grade uranium concentrate.

Later ore samples proved to have too much slime to make this quick leach process feasible and standard milling procedure was adopted to still produce a low-grade concentrate. Negotiations on methods and costs were initiated in Grand Junction by Mr. Porter and myself January 3, 1957, and were followed by further visits and telephone calls. The AEC indicated genuine interest in the possibilities of producing concentrate from ores of this grade.

We submitted our application for concentrate purchase to the Commission in July 1957 based on production of a low-grade concentrate that could be refined on a custom basis at Dawn Mill or the Vitro Mill in Salt Lake City.

We also indicated that Northwest could produce a final high-grade product at a reasonable price compared to the other contracts. The

Grand Junction office requested further information on the cost of the final product and this was submitted on October 9, 1957.

Our attorney visited the Commission office in Washington, D. C., immediately following the October 28 announcement of policy change and returned with the impression that even though commitments were being limited we were still being considered for a contract.

During a personal visit in Washington, D. C., in November 1957, I was first informed that we should try to work through the Dawn mill.

It was not until another personal visit in Washington, D. C., in January 1958 that we were definitely told that there could be no mill at Northwest and further no adjustment in the Dawn contract to accommodate us.

Our company has invested over $350,000 and 4 years of time to develop a small business and we are now told by the AEC that by mining on a custom basis we can "at least get our money back." It now appears that we have just been "spinning our wheels" under what we thought was a firm commitment to United States citizens and companies.

We feel that Northwest Uranium Mines, Inc., has some genuine equity in the domestic uranium program as originally announced, and we sincerely request that your committee approve adjustments in policy that will consider our case and others in a similar situation.

Chairman DURHAM. Thank you very much, Mr. Wilson. Are there any questions?

Senator JACKSON. Mr. Wilson, what is the haulage distance from your mine or where you would be stripping to the Dawn milling operation at Ford?

Mr. WILSON. It is approximately 20 miles.

Senator JACKSON. 20 miles?

Mr. WILSON. Yes.

Senator JACKSON. Taking into consideration other ore deposits in this area, the Spokane area, I take it you feel there is a definite need for a new mill that could take this additional potential?

Mr. WILSON. Yes, sir.

Senator JACKSON. Or could it all be concentrated at the Dawn operation?

Mr. WILSON. We are getting down to a discussion of ore reserves. From what we know of, say, the Dawn ore reserve, our reserves, plus other smaller ones, I doubt very much that there is enough mill capacity. I know there is not enough mill capacity to get all of this ore through by March of 1962.

Senator JACKSON. What I was going to ask is this: Do you feel that the Dawn mill at Ford could be expanded so as to accommodate the ore in that area, or should there be an entirely new mill? I am thinking not just of your operation, but other operations in that area.

Mr. WILSON. Well, the district certainly has potential that has not been fully explored, and, no doubt, other ore reserves will be developed.

Senator JACKSON. I am talking about the known reserves.

Mr. WILSON. Even with the known reserves, that mill, as it exists, cannot take all the ore by March 1962.

Senator JACKSON. But it could be expanded to do that?

Mr. WILSON. Yes; very easily.

Senator JACKSON. That way might save some money; that is, by not building a new mill.

Mr. WILSON. We are sure it could be. We were talking about a $2½ million mill. By a small investment we will not accomplish the total increase, but we will accomplish a very appreciable part of that.

Senator JACKSON. That is all, Mr. Chairman.

Chairman DURHAM. Senator Dworshak.

Senator DWORSHAK. Would you prefer having your own milling capacity, or would you be willing to provide some financial support for expanding the Dawn Co. mill?

Mr. WILSON. We feel that, in view of the general supply condition, we are willing to go along with the idea of expanding the Dawn mill.

Senator JACKSON. The main thing is that you want to be able to process your ore within the time limitation.

Mr. WILSON. That is right. As I said here, the best we could possibly do is get half of the product through, and that is assuming we are going to get all of that custom capacity.

Senator JACKSON. Which is a difficult assumption, maybe?

Mr. WILSON. That is right. In other words, we know we can have 5 percent of their capacity. If there is no other custom customer, we can have 25 percent. If we can increase their mill a little bit, all of those things would help us.

Senator DWORSHAK. Is the Dawn Co. willing to negotiate on that basis with you?

Mr. WILSON. That is what I understand; yes, sir.

Senator DWORSHAK. And the proposal has been made, also, to AEC?

Mr. WILSON. After our visit here in January, we had a visit with the manager of Dawn Co., who went to Grand Junction and talked this over with Mr. Jones. He proposed these four things to accomplish this result. As I indicated, the answer was "No," so when he came back to use he said, "The only way I can talk to you is as a custom customer. If you can get adjustments in these particular things, we can talk to you about being in the milling business with us." We assume that, if the Commission can see its way clear to make those adjustments, we can be a part of their milling business.

Senator DWORSHAK. But I believe, definitely, the 5 percent is not sufficient?

Mr. WILSON. Twenty-two tons is just not enough. We would not try to operate on that kind of a basis.

Chairman DURHAM. Thank you very much, Mr. Wilson, for your statement.

The next witness is Mr. J. H. Nason, of COG Minerals.

STATEMENT OF J. H. NASON, VICE PRESIDENT AND GENERAL MANAGER, COG MINERALS CORP.

Mr. NASON. Mr. Chairman and members of the committee, I am vice president and general manager of COG Minerals Corp., a company owned 50 percent by Colorado Oil & Gas Corp. and 50 percent by some 5,400 other stockholders. Our principal operations are conducted in the White Canyon area of Utah. Our problems are twofold.

First, to the extent that our operations parallel other miners who have been deprived of a market for their ore, we share their plight. That is, with an investment of some $1¾ million in mining properties, development work, and equipment for mining ore, we have suddenly been required to reduce our operations to a point where we cannot take advantage of the mechanization installed in our mine and where only by severe reductions in personnel can we break even on the scale of mining operations permitted us.

Second, and of prime importance to the uranium industry, particularly in the White Canyon area of Utah, is the effect of recently announced AEC policies which deprive us of the benefit of the research which we have already done and discourage further research by our company in processes for converting low-grade ores into yellow cake. I refer to the AEC's policy of limiting the yellow-cake purchasing program to present commitments.)

At no cost to the Government, our research engineers have developed and placed in operation in a 200-ton-per-day plant, a process for upgrading uranium ores of a content heretofore considered noncommercial, indeed, containing as little as 0.06 percent U_3O_8. With our gravity separation process, we have successfully extracted from such noncommercial ores approximately 50 percent of the uranium content in the form of a concentrate running from 2 to 67 percent U_3O_8 and approximately 50 percent as an enriched slime product containing approximately twice the U_3O_8 content of the feed material.

Recoveries are in the range of 90 percent of the U_3O_8 contained in the ore before treatment of discard tailings. Such tailings average less than 0.02 percent U_3O_8. Further, we have recently learned that, by flotation, we can economically recover enough of the U_3O_8 in those tailings to raise our overall recovery rate to nearly 95 percent.

Additionally, we have proven in laboratory and pilot plant, with results confirmed by the Colorado School of Mines Research Foundation and by the research departments of various chemical companies, processes to take the concentrate and the slime product of our upgrading mill to specification grade yellow cake. The cost of yellow cake made under our processes is substantially below the cost of conventional yellow-cake mills. The obvious reason for such costs savings is that our upgrading process removes 75 percent of the worthless gangue before handling and treatment. It affords a consistent and easily controlled quality of feed to the chemical process. Plant size and investment are reduced. Quantities of reagents are more than halved. For example, 98 percent of the uranium in our gravity concentrate can be placed in solution with 4 pounds of sulfuric acid per pound of U_3O_8. No existing mill can even approach this figure.

The cost savings, however, is only one important aspect of our work. Equally important is that our process, as its feed, takes ore grades that other mills cannot accept. Thus, by providing an economic method of concentration, we at once reduce mining costs and, taking into account only the White Canyon area, add to the Nation's reserves millions of tons of ore.

This is ore which miners are now, to the extent possible, bypassing or discarding and, to the extent that it is unavoidably mined, mixing with high-grade ore to average to a commercial grade. It is unnecessary to point out the economic waste involved in mixing low-grade with high-grade ore to average to a commercial grade.

It is unnecessary to point out the economic waste involved in mixing low-grade with high-grade ore only to transport it at Government expense to a mill where additional handling and materials costs are incurred because of the waste material added. Consider only that the low-grade ore bypassed or discarded is lost to the atomic energy program.

This is important. As the Director of the Raw Materials Division of the AEC stated in announcing the current purchasing program, the Nation's uranium ore reserves should occasion no complacency.

If we are to achieve the atomic power development anticipated in the next 10 to 20 years, uranium exploration and development should continue on a broad scale.

A similar viewpoint was expressed by the Bureau of Mines:

Ultimately, we are going to be faced with the problem of producing uranium from lower grade materials.

This was on February 10, 1958, in connection with a request for funds from the House Appropriations Committee for the study of low-grade uranium deposits.

Parenthetically, we should note that we are not requesting funds to support our work. We ask only that the Commission purchase the output of our development facilities so as to keep us in the competition. Our cost savings—even in experimental facilities which are necessarily smaller in scale and higher in cost than production facilities—are such that we are offering to sell yellow cake for a price of $8 per pound of U–308.

That price, we should add, would be the only cost to the Government. There would be no 6-cent per ton-mile allowance to haul 0.25 percent ores (5 pounds of U–308 per ton), no charge for amortizing facilities, no allowance for the research and development expenses we have incurred and expect to continue to incur. That $8 price may be compared with those quoted by the Director of Raw Materials in a speech of October 31, 1957:

The average price paid for domestic concentrate in the year 1956 was $11.60 per pound of U–308 and in 1957, $10.50. The estimate for the current fiscal year is $9.60 and for 1959, $9.30.

In candor, we should state that it was self-interest that led to our research on upgrading methods. Commercial ore in the White Canyon area, where our principal properties are located, is found in channels of Shinarump age.

The uranium (copper uraninite) is deposited either in seams (many of which are so thin as not to be capable of economical selective mining) or in pods which are surrounded by halos of low-grade ore. Accordingly, in order to recover economically the commercial grade ore in seam deposits, it is necessary to mine at least equal quantities of low-grade ore. Also, in mining the pod-ore bodies, it is necessary then to mine the low-grade halo unless such ore is to be irretrievably lost. The result has been that, since commencing operations in May 1956, through January 31, 1958, we have mined 109,000 tons of material as follows: 36,000 tons sold as commercial grade ore; 27,000 tons of low-grade ore moved to our upgrader; and 46,000 tons of waste.

Obviously, to carry with 36,000 tons of salable product the cost of mining 109,000 tons of material is not a satisfactory operation.

Our experience is typical. For example, Gordon B. Peck, of the AEC, in a February 1958 paper before the National Western Mining Conference at Denver, Colo., placed White Canyon average mining costs at $15.35 per ton. Such costs follow from the nature of the White Canyon deposits.

We have pursued the idea, however, that White Canyon operations could be made profitable by developing a process for upgrading noncommercial ore which would thereby enable less selective and lower-cost mining methods. The AEC has been familiar with our activities. From our first conversations with Messrs. Jesse C. Johnson and John T. Sherman, of the Raw Materials Division in April 1956, before our operations were commenced, we have kept the Commission apprised of our plans and progress. We have furnished flowsheeets and samples of upgraded materials and have helpfully been furnished with the results of tests upon these materials.

We have exchanged data concerning the amenability of the upgraded products to processes for chemical concentration into yellow cake.

Throughout, our activity has been predicated upon our understanding that a market would be available for our concentrated products when our process was proven.

We have made a number of attempts to market that product since our upgrading mill commenced operations in March 1957. Our first proposal in June 1957 was based upon negotiations with Vitro Uranium Corp. Vitro, appreciating the savings to be realized from our concentrated products, offered an arrangement whereby in the alternative either—

(1) The Vitro mill at Salt Lake City would purchase at a price of $7.59 a pound of recovered U_3O_8, less certain deductions for acid and grinding, our output of gravity concentrate and of a partially concentrated sludge to be made from our slime product; or

(2) The Vitro mill would process on a custom basis such concentrates at a mutually satisfactory cost.

The first alternative was conditioned upon the Commission's amending Vitro's yellow-cake contract so as to increase the quantity to be delivered thereunder.

The second alternative arrangement required that the Commission contract with this company for the purchase of the custom-milled yellow cake. On June 24, 1957, we proposed such a contract at a price of $8 per pound of U_3O_8 plus amortization of certain facilities. On July 5, 1957, our proposal was rejected for the reason that the AEC's policies did not permit any amortization of upgrading facilities and did not provide for buying custom-produced uranium concentrate from the ore producer.

We then urged the Vitro Corp. to attempt to obtain an amendment to its contract that would permit the first alternative arrangement. To date, such attempts have not been successful. Meanwhile, we continued our work on processes to convert our upgraded products to specification grade yellow cake.

In our next marketing attempt, we followed a suggestion of the Grand Junction office which in its announcement of the closing of the White Canyon buying station, had stated that Texas-Zinc Minerals

Corp. was providing "a market for ore produced in the White Canyon and Red Canyon area." We offered the products of our mill to Texas-Zinc Minerals Corp. On an interim basis Texas-Zinc is now buying our 5 percent gravity concentrate at a price which is roughly equivalent to Circular 5 plus a bonus equal to the savings in transportation costs of shipping concentrate as compared with ore of 0.25 percent U_3O_8. Texas-Zinc refuses, however, to take the other 50 percent of our product—the slime fraction or the sludge concentrate to be produced therefrom. We are unable to operate our mill under such arrangements.

In October 1957 we returned to the AEC with a proposal that we be permitted to convert into yellow cake for sale to the Commission at a price of $8 per pound the products of our upgrading mill. Because this proposal would involve the purchase by the AEC of additional yellow cake (a maximum of 600 pounds per day), action on our proposal has been delayed.

We cannot, of course, continue to stockpile 50 percent of the output (the slime product) of our mill. Unless we are afforded a market, we must sharply curtail our operations and any further research and development efforts toward processing low-grade ores. Specifically, we suggest—

(1) That to encourage private development of processes for the utilization of low-grade ore reserves, the AEC be enabled now to purchase, in addition to its existing commitments, yellow cake produced from such ores at a price of $8 per pound of U_3O_8.

(2) That the AEC now put into effect the policy which it has announced will apply during the period April 1, 1962, through December 31, 1966; namely, to purchase, at a price of $8 per pound, U_3O_8 contained in specification grade chemical concentrates in amounts up to 500 tons per year from any 1 operation.

(3) That the AEC be directed not to make additional commitments for yellow cake at prices exceeding $8 per pound of U_3O_8 and to require as a condition to increasing or extending any existing contracts that the price of yellow cake remaining undelivered thereunder be reduced to $8 per pound of U_3O_8.

We suggest that so long as the Government controls the market for uranium raw materials, it must permit incentives for the reduction of costs and the expansion of resources. Sudden changes of policy must not be permitted to deprive raw materials' suppliers of the benefits of their investments and efforts. The Government by its actions must refute the comment recently published by a nationally known investment firm:

> The success of a uranium-producing company is more dependent upon AEC purchasing policies than on individual management.

Thank you, sir.

Chairman DURHAM. Thank you very much, Mr. Nason.

Do you know a the present time how much we subsidize the low-grade ore in Canada?

Mr. NASON. I would say to quite an extent. The ore produced in Blind River runs about 0.15, and I would imagine that investment up there is maybe 100 or 200 million dollars. I do not know for certain.

Chairman DURHAM. Your situation is somewhat similar to Canadian, particularly if you take the low-grade ore and bring it up to the point where it is usable ore.

Mr. NASON. We have even taken ore that is lower than the Canadian low-grade ore. We take it at 0.15, and 0.05 is considered the lowest. Our mill ran last month on 4,400 tons of ore which averaged 0.075 percent U–308.

Chairman DURHAM. I was wondering if you were in about the same category of having it upgraded.

Mr. NASON. I would say the Canadian ore was similar to ours.

Chairman DURHAM. But South Africa is lower than Canadian.

Mr. NASON. Yes; but that is tailings from the production of gold. That is a different situation.

Chairman DURHAM. There is no other plant like yours in the country, then?

Mr. NASON. No, sir. There is no other plant like ours in the world. We built it ourselves, spent all the money for it. We are just like the little boy who got dressed up for the party and somebody took the party away.

Chairman DURHAM. You do not know what caused them not to try to credit this process?

Mr. NASON. No, sir. As a matter of fact, the latest statement from the Grand Junction office and also from the Washington office of the AEC is that they are in favor of our contract proposal, but that it is just being held up in the mill with everybody else.

Chairman DURHAM. Are you losing money at the present time?

Mr. NASON. Yes, sir. We have been losing money since we have been in operation. We expect to lose money until we get into the final production.

Chairman DURHAM. Do you have any questions, Senator?

Senator DWORSHAK. Have you had enough production to prove the sufficiency of this process?

Mr. NASON. Yes, sir. We have been in commercial operation since March of last year.

Senator DWORSHAK. What are you doing with your product?

Mr. NASON. We are stockpiling 50 percent of it. The remainder is being sold to Texas Zinc.

Chairman DURHAM. How do you stockpile that?

Mr. NASON. Slime ponds. We just leave them out in the weather.

Senator DWORSHAK. What is your general reaction to your failure to interest the AEC in this proposal?

Mr. NASON. We are a little perplexed that we came in and offered to produce material at $8 per pound which they say through 1959 is going to cost them $8.50 per pound. I mean just on the basis of the 1962 proposal.

For example, in 1959, we could save the Government $1,300,000 by supplying them with the same amount of material with ore that has no commercial value today.

Senator DWORSHAK. Do you appreciate that it is a fatal mistake to propose to save money in any operations within the jurisdiction of the Federal Government?

Mr. NASON. That could be. Perhaps I am naive to think that we should save money.

Senator DWORSHAK. You should find out how the Government operates.

Mr. NASON. It should not operate that way.

Senator DWORSHAK. If we did not continue such methods, we would have a tax reduction, and that may not be attractive either.

Mr. NASON. It would sure be attractive to me.

Chairman DURHAM. Well, thank you very much, Mr. Nason. That is a fine statement.

I have a statement for the record about the uranium deposit on Palangana Dome, Duval County, Tex.

Without objection, it will be inserted into the record.

(The statement is as follows:)

TESTIMONY CONCERNING THE URANIUM-DEPOSIT ON PALANGANA DOME, DUVAL COUNTY, TEX.

Ownership: The property is held under a leasing arrangement by the Columbia Southern Chemical Corp. who have made an agreement with Union Carbide Nuclear to mine and mill the ore.

Location: The deposit is in Duval County, Tex., 3 miles from the town of Benavides and about midway between Corpus Christi and Laredo.

Geology: The ore occurs as a bedded sandstone deposit in the cap of the Palangana salt dome. It is associated with a minor but complicated fracture system which can be observed on aerial photographs. Its depth below the surface ranges from 230 feet to 330 feet.

Means and date of discovery: At depths of 1,000 to 3,000 feet, potash was discovered a number of years ago by Columbia Southern in the salt of the dome. In probing for potash with radiation-detection instruments, they obtained a reaction at a depth of 230 feet far out of proportion to the reaction of potash. A second hole cored nearby proved the presence of 9 feet of uranium ore bearing more than 1 percent U–308. This occurred in the spring of 1955.

Exploration and development: Drilling to outline the ore body was started in the fall of 1955 and the aim was to develop 200,000 tons of ore. This was accomplished by the spring of 1956, at which time, ore was being developed so rapidly that it was deemed advisable to continue with the drilling to determine whether a 400- to 500-ton per day plant could not be built. By midsummer of 1957, an ore body, variously estimated from 900,000 to 1,300,000 tons had been developed.

Entrance of Union Carbide: As a chemical company, Columbia Southern did not feel qualified to mine the ore and offered partnership arrangements to qualified mining companies. Negotiations were concluded with Union Carbide in September of 1957. Thereafter, Union Carbide did some additional drilling to verify the results shown by Columbia Southern and were still doing this work when Mr. Johnson made his famous speech of October 28. In spite of the speech, they have applied for a milling contract which is under consideration by the Atomic Energy Commission.

Conclusion: Columbia Southern has spent about $250,000 in good faith, drilling the Palangana deposit, in the firm belief that there was an assured market for uranium until 1966.

The Commission knew the drilling was in progress and were fully informed of the accumulation of reserves as drilling proceeded.

The request was never made to Columbia Southern that drilling be discontinued. It now seems apparent that there is a moral obligation on the part of the Commision to grant a milling contract to Columbia Southern and Union Carbide of such size as to allow them to remove the ore body in its entirety by March 31, 1966.

ELMER V. REINHARDT,
Consulting Geologist, Grand Junction, Colo.

Submitted to the Joint Committee on Atomic Energy, February 25, 1958.

Chairman DURHAM. This afternoon's hearings will be in room 1334, New House Office Building. The committee is adjourned until 2 o'clock this afternoon.

(Whereupon, at 12:15 p. m. a recess was taken until 2 p. m. of the same day.)

AFTERNOON SESSION

The committee reconvened at 2 p. m., upon the expiration of the recess.

Chairman DURHAM. The committee will come to order, please.

I would like to make a statement.

We have an appropriation bill on the floor of the House this afternoon. We may have some difficulty getting members here. I may have to leave myself.

I believe, Mr. O'Callaghan, the legislative assistant to Senator O'Mahoney, wants to make a short statement.

STATEMENT OF JERRY A. O'CALLAGHAN, LEGISLATIVE ASSISTANT TO HON. JOSEPH C. O'MAHONEY, A UNITED STATES SENATOR FROM THE STATE OF WYOMING

Mr. O'CALLAGHAN. Yes, sir.

Senator O'Mahoney was hopeful of being here at the session yesterday. He has a slight cold and on the advice of his physician he has canceled all his appointments this week.

With the permission of the commitee, he hopes that, after he has had an opportunity to read the transcript, he may file a statement embodying his comments and remarks respecting the situation in Wyoming.

Chairman DURHAM. Without objection that may be done.

(The statement referred to follows:)

STATEMENT OF SENATOR JOSEPH C. O'MAHONEY, A UNITED STATES SENATOR FROM THE STATE OF WYOMING

As a Senator from Wyoming I take satisfaction in the fact that the estimates of the Atomic Energy Commission make my State the second largest in the Union for uranium ore reserves. Naturally I am concerned when leaders of the uranium industry report that the policy of the AEC, announced last October, severely limiting new mill capacity, creates the inescapable prospect that these ore bodies may remain undeveloped for an indeterminate number of years.

The ore reserves were established as a result of one of the most dramatic outbursts of mining energy in the long history of mineral exploration in the West. The energy and talent marshaled for this effort were mobilized at the direct and insistent behest of the Atomic Energy Commission as set forth in official documents and widespread publicity on the need to search for reserves of uranium ore. The Nation at that time was practically devoid of uranium ore reserves and was largely dependent on foreign sources of supply. It now appears that the very success of these men and women will be the measure of penalty assessed against them if no further milling contracts are to be granted.

In effect, the AEC has said to numerous applicants for milling contracts: "You have been so successful in finding ore that we no longer want you to concentrate it so we cannot grant you a mill contract."

GRANT PENDING MILL PROPOSALS

I think I understand some of the pressure under which the AEC reached its decision to halt the granting of mill contracts. There had been a sudden turning from scarcity to abundance of uranium ore. I am reminded, however, that in meeting this same situation in Canada the Government there gave its uranium industry a 90-day warning to get its house in order for a new era of abundance. There was no such warning given to American operators. In all equity and fairness to these people who discovered and developed these ore reserves at great expense of time, energy and money, I suggest to the Joint Atomic Energy Committee and to the AEC that all proposals properly filed with AEC on December 31, 1957, be honored if they meet the standards set forth by the AEC in the preliminary negotiations.

In making its decision last October to restrict issuance of further mill contracts, I know that the AEC had well in mind certain of its responsibilities under the law. I wonder, however, if in exercising those responsibilities, the Commission has properly taken into account another very important one under the law. In the declaration of policy in the Atomic Energy Act, both in the original and in the revised act of 1954, the language is clear that "the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise."

I am wondering if in formulating its new policy on mill capacity, the Commission took into full account its responsibility to "strengthen free competition in private enterprise." Because of this responsibility conferred by the Atomic Energy Act the Commission would not knowingly discourage such competition, yet the effect of inadvertence can be as devastating to free competition as premeditated actions. Wyoming uranium leaders have assured me that failure to secure new milling capacity in the very near future will not only postpone development of the ore properties in Wyoming but the delay will mean that the properties now in the hands of the independent local companies which developed them will have to be sold to those few companies so fortunate as to have secured an AEC contract before the curtailment.

LACK OF LOCAL COMPANIES

I am disturbed to see, in studying the list of companies with milling contracts with AEC, how few companies are indigenous to the State or region in which uranium ore reserves have been established. The investment in a uranium mill of 500 tons per day capacity is approximately $3 million as indicated by the chart in the Twenty-second Semiannual Report of the Atomic Energy Commission (S. Doc. No. 47, 85th Cong., 1st sess., pp. 2–3) a sum which suggests that financing uranium milling capacity is well within the capability of local organizations of business. Despite this, it is distressing to discover that only 810 tons of daily milling capacity of a total of 20,420 of such capacity is operated by local or regional business organizations. The concentration of contracts among the giants of the mining industry (or companies closely tied to them) is hardly evidence of adherence to the policy declared by Congress that the atomic energy program of the Government should "strengthen free competition in private enterprise."

The basis for this conclusion is the following chart derived from the one published in the Twenty-second Semiannual Report of the Atomic Energy Commission (S. Doc. No. 47, 85th Cong., 1st sess., pp. 2–3) and including current information furnished by the AEC with explanatory notes:

Ownership of milling capacity in uranium industry (mills operating or authorized)

Company	Site	Capacity	Cost
Rare Metals Corp.	Tuba City, Ariz.	250	$3,600,000
Rare Metals is a wholly owned subsidiary of Frobisher, Ltd., Toronto, Ontario, stock of which is owned to the extent of 34 percent by Ventures, Ltd.			
Vanadium Corporation of America	Durango, Colo.	700	
Climax Uranium Co.	Grand Junction, Colo.	350	3,088,000
Climax Uranium is 84 percent owned by Climax Molybdenum which has recently merged with American Metals to form American Metal Climax, Inc.			
Union Carbide Nuclear Co.	Uravan, Colo.	1,100	5,000,000
The Anaconda Co.	Grants, N. Mex.	3,000	19,358,000
Kerr-McGee Oil Industries	Shiprock, N. Mex.	500	3,161,000
Mines Development, Inc.	Edgemont, S. Dak.	400	
Mines Development, Inc., is 100 percent owned by the Susquehanna Corp., formerly the Chicago & North Shore System, which also owns Fremont Minerals which is authorized to build a 500-ton-per-day capacity mill at Riverton, Wyo.			
Uranium Reduction Co.	Moab, Utah	1,500	8,250,000
American Zinc Lead & Smelting owns 14 percent of the stock of Uranium Reduction Co. as well as 629,000 of subordinated debentures besides managing the operation and financing on a fee basis.			
Vitro Uranium Co.	Salt Lake City, Utah.	600	
Vitro Uranium Co. is an operating division of Vitro Corporation of America.			
Gunnison Mining Co.	Gunnison, Colo.	200	2,025,000
Gunnison Mining Co. is a Colorado mining company organized to exploit an ore reserve in Gunnison County, Colo. Vance Thornburg is president and with a brother is connected with the Lakeview Mining Co. which has a 200-ton per day capacity mill at Lakeview, Oreg.			
Trace Elements Corp.	Maybell, Colo.	300	2,208,500
Trace Elements is wholly owned by Union Carbide.			
Union Carbide Nuclear Co.	Rifle, Colo.	1,000	8,500,000
Union Carbide Nuclear Co. is an operating division of Union Carbide.			
Homestake Mining-New Mexico Partners	Grants, N. Mex.	750	5,325,000
Homestake Mining-Sapin Partners	do	1,500	9,000,000
Kermac Nuclear Fuels	do	3,300	16,000,000
Kermac Fuels is 56 percent owned by Kerr-McGee Oil Industries.			
Texas Zinc Minerals Co.	Mexican Hat, Utah.	775	7,000,000
Texas Zinc Minerals is owned 50 percent by New Jersey Zinc and 50 percent by the Texas Co.			
Dawn Mining Co.	Ford, Wash.	400	3,000,000
Dawn Mining Co. is largely controlled by Newmont Mining Corp.			
Lucky Mc Uranium Corp.	Fremont County, Wyo.	750	6,900,000
Lucky Mc is owned 60 percent by Utah Construction Co.			
Western Nuclear Corp.	Split Rock, Wyo.	400	3,600,000
Western Nuclear is a Wyoming organization, formerly Lost Creek Oil & Uranium Co.			
Phillips Petroleum	Grants, N. Mex.	1,725	9,545,000
Lakeview Mining Co.	Lakeview, Oreg.	200	2,650,000
Thornburg Bros., whose Gunnison Mining Co. has a mill at Gunnison, Colo., are chief backers of Lakeview Mining Co.			
Fremont Minerals	Riverton, Wyo.	500	
Fremont Minerals is another subsidiary of Susquehanna Corp. which also has a mill at Edgemont, S. Dak., operated by its subsidiary, Mines Development Co.			

WYOMING AS A DISTRESS AREA

Doubtless other areas have been adversely affected by the decision of the Commission to halt mill expansion, but the facts of the situation will show, I am certain, that Wyoming has been particularly hard hit. This comes about for a very simple reason. Before 1953, when the great uranium locale was the Colorado Plateau, there had not been a commercial discovery of consequence in Wyoming. This changed almost overnight with the discovery at Gas Hills in eastern Fremont County and the subsequent discoveries at Crooks Gap in southern Fremont County. The uraniferous Wind River sandstone is exposed over a great area in central Wyoming and ore drilling subsequent to the initial discovery has developed an ore reserve unofficially but reliably estimated by

Mr. Roy Peck, vice president of the Wyoming Mining Association, as 20 million tons, a figure which AEC officials are willing to accept as reasonable, although not a figure yet confirmed officially.

Paralleling the drilling and development has been the creation of the companies engaged in exploiting this nuclear resource. Thousands of claims were first staked by individual prospectors, some of them professionals, many of them part-time and weekend prospectors. Many of these people were not persons of mining experience with access to the money to develop their claims. Others were men and women of business experience who organized companies. Many claims were sold for cash or stock to these emerging uranium companies as properties were blocked into economic units. In this manner the companies and the properties were wedded. This process has gone to the point of economic efficiency. To concentrate further ownership of ore reserves, which will follow any refusal to grant additional milling capacity, would promote local monopoly in violation of the express mandate of Congress to strengthen free competition in private enterprise in connection with the atomic energy program.

The distress in Wyoming is quickly measured by a look at the ratio between mills and ore reserves. In New Mexico there is, in round figures, 1 ton of daily milling capacity for every 4,800 tons of reserve, and in the Nation the ratio is 1 ton of milling capacity to 3,300 tons of reserves. In Wyoming the ratio is 1 ton of daily milling capacity to 12,121 tons of ore reserve. To bring the ratio of milling capacity to ore reserves into line with the New Mexico ratio, Wyoming needs a total of 4,000 tons of daily milling capacity. In other words, it needs approximately 2,500 more tons than is now assigned. The equalization ratio could quickly be established if the AEC would approve contracts for new facilities embodied in the proposals before the Commission.

STRATEGIC CONSIDERATION

From a strategic sense there is doubt, it seems to me, of the wisdom of concentrating so much of the milling capacity of this highly strategic mineral in an area of so narrow compass. As J. E. Brosseau, president, Westwater Corp., Santa Fe, N. Mex., told the committee, 70 percent of the uranium ores and their milling capacity are concentrated at Ambrosia Lake where, as he said, "through some means of sabotage * * * even though we are not in a state of war, an enemy agent could make Ambrosia Lake area radioactive and would completely knock out that whole field."

Concentration of ownership of milling capacity is not healthy for the economy. Concentration of milling capacity in a geographic area is bad for defense. This could all be remedied, for the time, at least, by 4,000 tons of new capacity in Wyoming.

PERMANENT PROGRAM

This suggestion deals only with bridging the transition to the new era of uranium which will be characterized by ample reserves of ore and by increasing commercial uses. Until that time I advocate a stockpiling program as I have done since it became apparent that the reserves of uranium ore had become sufficient to meet the immediately predictable needs of the atomic energy program as it appeared last October. Of course, since then the whole picture has changed. The Soviets have launched sputnik. The United States is embarking on a new space age, a significant portion of the energy for which will come from the fission of the uranium atom. The commercial exploitation of atomic energy is closer every day, particularly in those regions of the world where cheap hydroelectric or fossil fuel energy is not readily available.

A stockpile of uranium concentrate against the day of expanded demand would be a policy of foresight on the part of those charged with administration of the atomic energy program.

Chairman DURHAM. The first witness this afternoon will be Mr. Robert Adams, president of the Western Nuclear Corp.

STATEMENT OF ROBERT ADAMS, PRESIDENT OF WESTERN NUCLEAR CORP.

Mr. ADAMS. Mr. Chairman and honorable members of the Joint Committee on Atomic Energy, I am deeply grateful for the privilege of coming before this committee to report on the problem facing

Wyoming's uranium industry, and more particularly the problem besetting Western Nuclear Corp., of which I am president.

By way of introduction, Western Nuclear Corp. is a uranium mining and milling company with offices in Rawlins, Wyo. Virtually all of our properties are in the State of Wyoming. Most of the corporation's stockholders are residents of Wyoming and Colorado, although in the last 2 years, hundreds of investors in nearly all parts of the Nation have become stockholders.

Western Nuclear's mill at Jeffrey City is the only uranium mill currently operating in Wyoming. Two other mills approved for Wyoming are still under construction.

Our problem, stated briefly and simply, is this:

About 4 years ago, the people of Wyoming, with the blessing of the Atomic Energy Commission, launched an intensive search for uranium ore.

After expending considerable time and much money, we have been successful in locating substantial ore deposits. But now we are faced with a strange dilemma—we have found the ore the Nation needs, but the opportunity to market it, and thereby realize a return for our efforts, has been severely limited.

The committee, I am sure, is well aware of the reason behind the Atomic Energy Commission's decision to restrict purchases of uranium oxide. I realize that basic national policy considerations may be involved.

On the other hand, this decision has resulted in hardships and inequities in the uranium industry, especially in Wyoming, which I feel were not foreseen and never intended.

Western Nuclear Corp. now has before the Atomic Energy Commission certain proposals designed to alleviate some of these hardships and inequities.

A detailed résumé of this proposal, together with pertinent facts and figures, is contained in an appendix to this presentation. The proposal itself is somewhat technical but I would like to discuss it briefly a little later.

At this time, I think it is sufficient to say that AEC officials have studied the proposal sympathetically and have agreed it is a fair one. But their hands are tied.

I trust that the committee, after it has ascertained the facts, will agree that it is in the best interests of all concerned that AEC's hands should be freed of unfairly restrictive bonds.

To help the committee understand the background of the situation, I should like to speak for a few moments about the history of the uranium industry in Wyoming and of Western Nuclear Corp.

In 1954, several friends and I became interested in the possibility of finding uranium in commercial quantities near Rawlins. Since we were men of modest means, we planned to invest no more than $5,000 each in the venture.

We soon discovered that prospecting for uranium was a highly technical and expensive business; to do the job right we would need far more money than we had available as individuals. We had the alternative of forgetting about uranium, or going into it full-time with every resource at our command. The favorable prospects of finding ore, fortified by the Government's aggressive policy of encouragement, caused us to incorporate and offer stock to the public.

In the beginning, we were simply one of many scores of penny uranium firms all trying to raise the capital necessary to carry out plans for prospecting and mining the ore our Nation needed. I believe I am justified in saying, without false modesty, that of all these small, hopeful, struggling companies, Western Nuclear is the only one to grow into an independent, integrated mining-milling operation.

How was this possible? Frankly, a portion of any exploration success is luck. But behind luck was a solid foundation of good management, an enormous amount of hard work by dedicated employees, and the fact that we were able to raise adequate amounts of capital when it was needed.

Let me cite a few figures.

As of November 1, our little company had committed itself to a total of more than $3,200,000 in acquiring, exploring, and developing uranium properties located in Wyoming. This is a staggering sum for anyone to spend if he has no immediate prospect of recovering his investment. We had every reason to believe that such a prospect existed.

As will be pointed out later, the bulk of this money was put up by a number of our stockholders including myself. Gentlemen, we have an investment of $1,773,000 in claims and leases, and $1,434,000 in exploration and development. This has strained our resources to the limit.

However, this is only a fraction of Western Nuclear's total investment. To the above figure must be added more than $4½ million which was spent in building the mill at Jeffrey City and for operating capital. Then there are additional expenditures for such necessary items as rotary drills, trucks, tractors, loaders, and all the other costly equipment needed by a mining company.

In the meantime, it became apparent our company would be more successful if we had a mill to process the ore we located and mined. Consequently we began a series of conferences with representatives of the Grand Junction Operations Office of the AEC.

I should like to add, at this point, the AEC's attitude throughout these conversations was sincere, cordial, and helpful. I cannot praise too highly the courtesy, devotion, and efficiency of the AEC personnel with whom we worked. Our negotiations were kept, at all times, on a high plane of mutual trust and respect.

The upshot of these negotiations was that we were granted a contract to build a 400-ton mill, the first in Wyoming.

During this period, we continued our exploration program for additional uranium ore to the limit of our resources. By the time the mill began operations in July 1957, the company had sufficient ore reserves to support a request for expansion of mill capacity.

Negotiations for this expansion proceeded smoothly until last October when the uranium industry suddenly was notified that the United States would not further expand production of uranium concentrate. In effect, the market for uranium was frozen at the then existing levels.

Without detailed knowledge of the entire picture, it is difficult to quarrel with the merits of this decision. However, as I have pointed out earlier, this restrictive order has created enormous problems, especially in Wyoming.

These arise from the fact that while Wyoming is rich in uranium deposits, it has very limited milling capacity—due to the fact the State was late in developing its reserves.

According to AEC figures, Wyoming today has in excess of 9 million tons of uranium ore indicated and inferred. This does not include ore classified as "potential" which, if counted, would swell the total to at least twice that amount.

To mill and market this ore in an 8- to 10-year period, a length of time AEC considers reasonable as a basis in negotiating mill contracts, Wyoming would need milling capacity of approximately 3,500 tons per day.

Actually, the three mills authorized for Wyoming have an allocated capacity of less than half that figure.

The Western Nuclear mill, now in operation, has a rated capacity of 400 tons per day.

The Lucky Mc mill, expected to begin operations this spring, has a rated capacity of 750 tons per day.

The Fremont Uranium mill, now under construction, has a rated capacity of 500 tons per day.

The total rated capacity of these 3 mills is 1,650 tons per day.

These figures are undeniable evidence that Wyoming needs more mill capacity if its reserves are to be utilized.

In the case of Western Nuclear itself, the figures are even more convincing.

By the AEC's most conservative estimates, Western Nuclear owns and controls more than 2,400,000 tons of uranium ore indicated and inferred.

Our own figures show reserves of commercial ore easily double that tonnage. Be that as it may, if we are forced to continue processing our present allowable of 6,000 tons per month from our own properties, it would take at least 34 years to mill our indicated and inferred reserves.

It should be pointed out that this does not consider potential reserves or additional reserves which may be developed.

From an industrywide point of view, the problem of the small mining company is extremely serious. At present, because of Wyoming's limited milling capacity, the market is extremely restricted and the small miner cannot raise his production to efficient levels. Without a market, the small miner cannot exist.

Gentlemen, I submit that the United States Government, having encouraged small miners to prospect for and produce uranium ore, has a responsibility to provide them with a market for their product. It would be a breach of faith to do less. It is morally indefensible to let down these men who are the backbone of our strategic mining industry. I have every confidence the need for uranium oxide will continue to grow. It is only prudent to cultivate the sources of the ore.

I would like to add at this point that if this milling capacity could be divided among all the producers in proportion to the ore reserves, 1957, that it certainly would be a fair approach. Whether or not a person owned a mill or was a custom producer, he would have the same amount of market for his reserves.

Mr. TOLL. Would that not tend to discourage exploration after November 1957?

Mr. ADAMS. I might add that possibly there should be some capacity kept open for new discoveries and additional custom ore.

This, in brief, is the problem facing the Wyoming uranium industry today. Now, I should like to outline Western Nuclear's proposal for alleviating this situation. The proposal consists of two parts.

The first is that Western Nuclear's milling capacity be expanded to the realistic figure of 1,200 tons per day, with 300 to 400 tons of this capacity being reserved for custom milling.

Our proposal to the AEC makes it clear that an existing mill can be enlarged far more economically than building a new one.

The second is that the capacity of the Lucky Mc mill be increased in the same ratio for both their owned ore and custom ore. This plan would give an adequate market for the custom producers, a market in the same proportion as their reserves, as well as to give the existing mills a competitive capacity in the eventual free market, especially in relation to the large Canadian mills. These large foreign mills were also fostered by the previous AEC program.

If these proposals are adopted, Wyoming will be able to develop its uranium resources in an orderly and efficient manner. Furthermore, those of us who demonstrated our faith will be assured of an equitable return for our investments of time, effort, and capital. More important, a sound basis will be laid for an industry that must be kept strong and vigorous to meet the challenges of both defense and peaceful uses of atomic energy.

I should like to close this presentation with one additional thought. This country has grown on the principle that everyone, big or small, has an equal opportunity to succeed. There are people across the seas who say this is a lie, that under capitalism, as practiced by the United States, the small man has no chance whatever.

Gentlemen, I believe in our system. In this belief my company and its stockholders spent over $3 million for new properties and exploration between October 1956 and November 1957. Surely this small company, founded by common people like myself with the support of hundreds of other common people, has thus far proven that the Communists are wrong.

Now, all I ask is a modification of the recent policy so that we can continue to do business and in the process help other small operators find a market for their ore. You have heard the facts. You have both the authority and the responsibility to correct an injustice. Our future lies in your hands, and the uranium industry of Wyoming joins me in the confidence that you will act swiftly to provide us with relief.

Thank you.

Chairman DURHAM. Do you want the correspondence put in the record?

Mr. ADAMS. Mr. Chairman, I would like to have it placed in the record.

Chairman DURHAM. Without objection, it may be placed in the record at this point.

(The material referred to follows:)

WESTERN NUCLEAR CORP.,
Rawlins, Wyo., January 7, 1958.

Mr. ELTON A. YOUNGBERG,
Assistant Manager, United States Atomic Energy Commission,
Grand Junction Operations Office,
Grand Junction, Colo.

DEAR MR. YOUNGBERG: Following our conference in Casper on January 6, 1958, with Mr. Grutt and Mr. Curry, I asked Mr. Hudson to send you two copies of the ore-reserve data for Western Nuclear Corp. as of December 31, 1957. These revised figures are based upon the same information forwarded to your Casper office, and are actually current as of November 1, 1957. The revised figures resulted from refinements in calculation rather than from the use of any data obtained subsequently to that cutoff date.

It was quite interesting to learn that the difference between the indicated and inferred ore reserves submitted by our company and those developed by your Casper office is less than 7 percent, although the difference encountered on a single individual property may exceed this figure. As an example, I believe the figure carried by your Casper office for the indicated and inferred ore on the Bullrush is less than half the tonnage carried by us. However, we found that our data submitted on this particular property just prior to November 1, 1957, has not been mapped and calculated. We feel that when this is done that our figures will be in reasonable agreement. In general, your Casper office carried more tonnage of indicated and inferred ore on the Day-Loma-Wencor and on the Crooks Gap and Jeep claims than we did. This is counterbalanced by the higher tonnage carried by us on the Bullrush, resulting in a reasonable agreement as to totals. We believe that recalculation of the Bullrush ore using the above-mentioned data will result in your Casper office arriving at a greater total indicated and inferred tons that we have reported.

As to the potential ore reserves, the greatest discrepancy occurs on the Day-Loma-Wencor claims where we believe our figures are approximately 1 million tons larger than yours. However, we still defend the higher tonnage on the basis that it is justified even though calculated on a 400-foot grid and since it is classed as potential rather than inferred or probable ore. To support this view, we have attached two sheets to our ore reserve report using as an example the area which has, subsequent to November 1, 1957, been drilled on a 50-foot grid for the shallow ore and staggered 100-foot grid for the deeper ore. In the example chosen, the total indicated, inferred, and potential ore in the 2 zones within the area of influence of hole No. LO 11–1, a square measuring 400 feet on the side, is 204,377 tons. Thirty-five percent of that area has now been drilled on the closer spacing, and the indicated ore therein now amounts to 101,400 tons. Comparing this to 35 percent of the indicated, inferred, and potential ore totals of 204,377 tons, or 71,532 tons, an increase of slightly more than 40 percent is shown when the area is drilled out on the closer spacing. We do not say that this figure will be firm for the entire area in question, but, in our opinion, it is evidence that we have not been overly optimistic in the tonnage of potential ore assigned to this property.

To recapitulate, the total tonnage of reserves of indicated, inferred, and potential ores owned or controlled by Western Nuclear Corp. will exceed 3,750,000 tons (including Valley Dean and Bengal) based upon the figures accepted by your Casper office. We in turn are showing a total of 4,650,000 tons of indicated, inferred, and potential ore. Neither of these figures take into account the increase in tonnage which will result from the mining dilution which we have found to equal or exceed 20 percent. Therefore, we again reiterate that the total reserves of company-owned and controlled ore to be milled by Western Nuclear Corp. will exceed 5,500,000 at an average assay of approximately 0.23 percent.

If we can furnish you any additional information which will assist in the resolution of this problem, we will be happy to do so.

Sincerely yours,

WENDELL W. FERTIG,
Executive Vice President.

WESTERN NUCLEAR CORP.,
Rawlings, Wyo., January 15, 1958.

Mr. ALLEN E. JONES,
Manager, United States Atomic Energy Commission,
Grand Junction Operations Office,
Grand Junction, Colo.

DEAR MR. JONES: As you requested, we are submitting the following data covering the investment of Western Nuclear Corp. in properties located in the Gas Hill-Crooks Gap area of Wyoming. By November 1, 1957, our total investment in claims and leases, including exploration and development costs, was $3,209,636. This represents the total expenditures from the inception of the company in March 1955, to the cutoff date of November 1, 1957. It is divided almost equally between acquisition costs of $1,775,214, and exploration and development costs of $1,434,442. Fifteen thousand dollars of the former figure should be applied as the cost of claims and leases which have now been abandoned, and exploration costs of $115,181 expended on these same properties is included in the latter.

Although it is difficult to estimate accurately, we believe that the direct exploration and development costs now included in the acquisition cost of properties still retained by us would be $250,000. All development work on the Bullrush claims, plus the annual assessment work done prior to our acquisition of that property is included in the above figure of $250,000.

Referring to our letter of October 17, 1957 on this same subject, although a considerable portion of the work done and the property acquisition was subsequent to the granting of our present contract, it was done with every expectation of obtaining additional milling capacity which would be justified, based upon our rapidly expanding reserves. Certainly we have made every effort to expand those reserves since we knew that our known reserves at the time the contract was granted were insufficient to justify any hope of long operating life. The aggressive campaign of acquisition, exploration, and development has resulted in providing the very substantial reserves which we have reported to you under a letter addressed to Mr. Alton Youngberg. The program had been virtually completed before we were advised that sufficient reserves of uranium ores had been developed and that the Atomic Energy Commission was no longer interested in further active exploration. Had we continued at the same rate of progress, we would have developed reserves nearer 6 million tons rather than that currently reported to you as of record of November 1, 1957. As an example, in engineering the Loma claims for stripping, we have expended some $40,000 for close-spaced drilling since November 1, 1957. This resulted in a substantial transfer of ore, formerly carried in the potential category, to indicated ore and has proven the area sufficient to convince us that that will be our next mining operation.

The annual assessment work and the cost of maintaining our leases in force, including advance royalty payments that must be made, will total approximately $50,000 per year. This does not include any costs that might be required on those properties upon which there are no outstanding royalties or annual assessment work to be done, but upon which patent applications have been made.

We shall be pleased to furnish you with any additional information which you may desire, or in such greater detail as you request.

Yours very truly,

ROBERT W. ADAMS, *President.*

WESTERN NUCLEAR CORP.,
Rawlins, Wyo., December 6, 1957.

Mr. ALLAN E. JONES,
Manager, United States Atomic Energy Commission,
Grand Junction Operations Office, Grand Junction, Colo.

DEAR MR. JONES: Following your telephone conversation with Mr. Adams, he asked me to furnish you certain preliminary information covering an amended proposal which we are in position to submit to you upon your request. In arriving at this proposal, certain assumptions were necessary, and they are detailed below. In making these, it is assumed that:

(*a*) The ore reserve figures used are about those accepted by the AEC, but since we have no access to the official AEC reserve figures, they may be in error, but in our opinion the major totals are accurate, at least in relation to one another.

(*b*) The Fremont, Western Nuclear, and Lucky Mc mills will be expected to treat the tonnage of ore reserves used in (*a*) above within a period of 10 years,.

(*c*) The proportion of custom ore tonnage milled, after deducting that tributary to the Fremont mill, will be divided between Western Nuclear and Luck Mc in the same proportion as their present capacity, i. e., 400 to 750.

(*d*) Our present contract No. AT-(05-1)-709 will continue in effect until completed, thereby prodiving for 440 tons daily at .20 percent U_3O_8 at the purchase price specified in the above contract.

(*e*) The new proposal will provide for additional tonnage of 880 tons per day of an ore grade and at a price per pound of U_3O_8 to be given later.

(*f*) The tonnage allotted under contract No. AT-(05-1)-709 and that provided under the additional tonnage allotment in the amended proposal, shall be run simultaneously with the first 440 tons daily to be credited to the contract No. AT-(05-1)-709.

(*g*) The amended proposal shall run for 60 months from the date that the expanded mill is operated at a total capacity of 1,320 tons per day.

The Crooks Gap and Gas Hills areas have reserve tonnage from which may be developed the minimum mill capacity to be assigned Western Nuclear Corp. under this amended proposal. It is necessary to make assumptions as outlined in paragraph (*a*) above, therefore, it is assumed that each have the following reserves:

Name of company	*Tons of reserves*
Lucky Mc	3,700,000
Western Nuclear Corp. (including Valley Dean)	3,880,000
All other producers	3,730,000
Total reserves assigned Crooks Gap and Gas Hills	11,310,000

In order to proportion the tonnage of custom ore that will be assigned to each of the mills as listed under paragraph (*b*), it is assumed that:

	Tons of reserves
All custom reserves	3,750,000
Fremont (10 years at 300 tons per day)	1,080,000
Remaining custom reserves	2,670,000
By paragraph (c), Western Nuclear should mill	930,000
Balance to be assigned to Lucky Mc	1,740,000

The 930,000 tons of custom ore to be milled by Western Nuclear Corp. on a 10-year basis will be provided by the following properties from tonnages assigned under (*a*) above. The distribution is based upon those custom reserves most readily accessible to the Split Rock Mill of Western Nuclear, and this fact is reflected in the reduced average haul used in calculating costs under the amended proposal.

Company name	Daily tonnage	Monthly tonnage	Total reserves
Federal, West Gas Hills only	140	4,200	400,000
Phelps Dodge	100	3,000	300,000
Continental	40	1,200	100,000
Miscellaneous Crooks Gap production	10	300	30,000
Miscellaneous West Gas Hills production	40	1,200	100,000
Total	330	9,900	930,000

	Tons
Total custom ore	930,000
Western Nuclear Corp. company-owned ore	3,860,000
Total tons of mill feed, 10 years	4,790,000

This last total may be compared to that obtained by multiplying 1,320 tons per day by 360 days per year by 10 years, resulting in a total tonnage of 4,752,000 tons. Therefore, based upon reserves, assumed to be assigned and those owned and controlled by the company, the total tonnage of the Western Nuclear Split Rock mill should be 1,200 tons per day with an allowance for a 10-percent overage, or 1,320 tons to be divided between the present contract, AT-(05-1)-709, calling for a total of 440 tons per day, and an additional 880 tons to be provided under this amended proposal.

To establish an equitable percentage of custom ore that may have to be milled, it should be noted that under the present contract AT-(05-1)-709, we are required to mill 25 percent of 13,200 tons or a total of 3,300 tons. Under the amended proposal, it is contemplated that 20 percent of the 26,400 tons monthly (880 tons daily) or 5,280 tons shall be devoted to custom ore. Therefore, the total amount of custom ore to be milled is 8,580 tons out of a total of 39,600 tons monthly (1,320 tons daily) or 21.7 percent of all ore fed to the mill will come from custom sources. These percentages were arrived at from the figures previously given illustrating the relation between custom and company-owned or controlled reserves.

In establishing the minimum tonnage for the Split Rock mill, it should be noted that the present contract AT-(05-1)-709 provides for 440 tons of 0.20 percent U_3O_8 while the amended proposal calls for an additional 880 tons of 0.24 percent of U_3O_8. Equating the 2, we find that this combined tonnage is equivalent to 1,320 tons of 0.23 percent U_3O_8 as discussed in the original proposal.

To give you a preliminary estimate of cost of producing 1 pound of U_3O_8 under the conditions outlined in paragraph (e): We assume that 880 tons of 0.24-percent ore would be milled daily, 26,400 tons monthly, 316,800 annually, or a total of 1,584,000 tons to be milled in the 60 months from the date that the expanded mill reaches capacity. Based upon an average head of 0.24 percent and assuming a 90-percent recovery, 6,842,880 pounds of U_3O_8 should be recovered during that 60-month period at an average cost to the AEC of $7.55, plus $0.46 per pound amortization, to give a total cost of $8.01 per pound of U_3O_8 produced. Schedule A, table 2, and the estimated cost of expanded operation are attached and furnish detailed information to support the above price.

It must be realized that these figures are based upon preliminary estimates, and may be modified slightly, but in general they are sufficiently accurate to be used as a basis for negotiation.

Yours very truly,

WENDELL W. FERTIG, *Executive Vice President.*

Estimated cost of expanded operation

Total cost of ore 0.24 percent—$19.80, at 90 percent (4.32 pounds)	$4.58
Mileage average haul 23, at $0.06 equals $1.38	.32
Total	4.90
Stockpiling fee	.13
Milling, at 7.17	1.66
Return on investment	.86
	7.55
Amortization $=\frac{3,117,124}{6,842,880}=$	.46
Total cost	8.01

Schedule A

Estimated costs of construction of expansion facilities	$3,117,124
½ thereof	1,558,562
Working capital	3,130,292
Net investment	4,688,854
Return of 25 percent annually	1,172,203
Return per ton	3.70
Return per pound of U_3O_8	.856

TABLE II.—*Summary of estimated working capital requirements*

Product inventory and accounts receivable	$610,560
Supplies inventory:	
1. Ore 4 months, 105,000 tons, at $21.18	2,223,900
2. Reagents 30 days	115,536
3. Other operating supplies, 6 months	120,968
4. Maintenance supplies, 6 months	59,328
Total	3,130,292

WESTERN NUCLEAR CORP.,
Rawlins, Wyo., February 12, 1958.

Mr. ALLAN E. JONES,
Manager, Atomic Energy Commission,
Grand Junction Operations Office, Grand Junction, Colo.

DEAR MR. JONES: Enclosed in triplicate is a schedule which relates our total investment in uranium properties in the State of Wyoming as of November 1, 1957.

I would call your attention particularly to the item of $300,000 which is included as exploration and development costs. We have included this item in lieu of making a detailed audit of the expenses which have been deferred from inception of the corporation to June 30, 1957. These expenses totaled slightly over $600,000 and since the company's entire endeavors have been devoted to the acquisition and development of uranium properties on the one hand and the milling facility on the other hand, we feel that it is reasonable to relate this $300,000 amount to the uranium acquisition, exploration, development efforts of the company. As we have pointed out in previous letters, all new property acquisitions and exploration programs were carried out during 1957 by a group of stockholders through a syndicate referred to as Wyoming Ventures. This was necessary in view of the restrictions of our financing agreements. The company is now acquiring these properties from this group at twice their investment in the properties; the 100-percent markup being, in the opinion of the board of directors, fair compensation for the risk involved in acquiring and exploring for uranium.

If there is any additional information which would be of help to you in your presentation of the overall picture as it pertains to our area and our company in particular, please let us know and we shall furnish anything available.

Yours very truly,

F. O. GRIFFIN, *Treasurer.*

WESTERN NUCLEAR CORP.

Analysis of investment in uranium properties situation in Wyoming at Nov. 1, 1957

Active properties	Acquisition costs	Exploration and development	Total
Crooks Gap area:			
Sno Ball claims	$130,140.00	$194,718.53	$324,858.53
McIntosh lease	33,320.57	89,537.27	122,857.84
Gas Hills area:			
Frazier-Lemac	764,767.22	65,884.67	830,651.89
Bullrush claims	340,940.85	284,619.56	625,560.41
Day claims	106,692.00	122,873.56	[1] 229,565.56
Loma claims	60,304.00	68,942.12	[1] 129,246.12
Thunderbird claims	90,110.00		[1] 90,110.00
E. & H., Puddles, Toms, Saps, Z's, and XYZ's	70,000.00	12,172.80	[1] 82,172.80
Sagebrush, Cal, MBH, P. & F., etc	150,000.00		150,000.00
Jeeps, Midcos, and Wencor		53,220.72	[1] 53,220.72
Other areas:			
State leases	3,939.75		3,939.75
Little Man claims	5,000.00		5,000.00
Costs of equipment, assaying, general supervision, and other costs expensed (estimated)		300,000.00	300,000.00
Abandoned properties:			
Hope and Star claims	5,000.00		5,000.00
Others:			
Company	15,000.00	115,181.00	130,181.00
Joint venture		127,271.80	[1] 127,271.80
Total	1,775,214.39	1,434,422.03	3,209,636.42

[1] These properties are being acquired from Wyoming Ventures and of the total costs attributable to these properties, $325,793 was expended by Wyoming Venture. The balance is made up of a like amount since the properties are being bought at twice the investment and by obligations incurred directly by the company.

Chairman DURHAM. The next witness is Mr. Vern Hughes, president of the Shoni Uranium Corp.

STATEMENT OF VERN HUGHES, PRESIDENT, SHONI URANIUM CORP., RIVERTON, WYO.

Mr. HUGHES. Mr. Chairman, gentlemen of the committee, I am Vern Hughes. I am president of the Shoni Uranium Corp., of Riverton, Wyo.

I do not propose to impose unnecessarily on your time; my remarks will take much less than half the time allotted to me. I hope this brief statement is of benefit to you in conserving your time.

I arrived in central Wyoming in July of 1954 on a uranium-prospecting trip and decided to stay. I immediately began staking claims and spending money. Very shortly I had a great many claims and no money.

About this time I allowed a few friends to participate with me in this project and later formed a corporation known as Shoni Uranium Corp., pronounced Sho-nee. A public sale of this stock was completed in late 1956. After an expenditure of well over $200,000 we are today in proud possession of a substantial proven ore body from which we will be able to sustain a high rate of production. This is the culmination of an effort begun in 1954 in which 1,200 stockholders participate.

We have elected to be a surviving independent and look with great misgiving upon any set of circumstances that tends to force us toward merger or consolidation with larger companies. We feel at this point that the only hazard left to our surviving is that of market. In the beginning, market was the only thing we felt we could be certain of.

We have had satisfactory and encouraging conversations with both the lucky Mc Uranium Corp. and Fremont Minerals. Both these companies, I might identify, as companies which have been granted mills which are under construction. The latter company is about to begin construction of a 500-ton mill, and the former company is just completing the construction of a 750-ton per day mill. At a quota of 1,500 to 2,000 tons of ore per month we feel we have reserves at the present time adequate to sustain shipments for about 3 years.

Our properties remain largely unexplored. We have nearly exhausted our cash on hand. Our total investment in this business at the point of commencing shipments of ore will be nearly $350,000. At the rate of 2,000 tons per month of $15 base price ore, it will take us over a year to get out of the red. This we do not object to if, in return, we can enjoy the assurance of a continuing market for our product in keeping with the printed and implied promises and encouragement which led us into uranium mining in the beginning.

We do not ask for a market that will permit us to make huge profits in the face of congressional uncertainty as to the amounts of yellow cake the Government should buy at this time, but we do ask that the rather minimal quota which we expect to get, which will permit us to operate with an eventual profit in sight, be graced by a contract of such duration as to provide us the market security readily apparent when one reads the duration of the ordinary mill contract.

This, gentlemen, then, is our plea: That while we recognize we cannot expect to sell unlimited quantities of ore, we do feel that we are entitled to the market through 1966 that Atomic Energy Commission

news releases and statements of other types have referred to, dependent upon our ability to produce salable ore.

If you gentlemen have any questions, I would be happy to try to answer them.

I wish to thank you, Mr. Chairman, and gentlemen of the committee. If you have any questions, I will be glad to try to answer them.

Chairman DURHAM. Thank you very much.

You have not shipped any ore at all?

Mr. HUGHES. We have not yet shipped any ore; that is true.

Chairman DURHAM. Do you have any contracts to ship any?

Mr. HUGHES. We do not have a contract at the present time; no, sir.

Chairman DURHAM. Thank you very much for your statement.

Are there any questions?

Representative HOSMER. No questions.

Chairman DURHAM. The next witness is Mr. Cotter Ferguson, Gas Hills Uranium Corp.

STATEMENT OF COTTER FERGUSON, ON BEHALF OF GAS HILLS URANIUM CO.

Mr. FERGUSON. My Chairman, if I may, inasmuch as my brief is quite lengthy, with your permission I would like to depart from that brief and speak shortly and orally.

Chairman DURHAM. That is perfectly all right. We will appreciate that very much. Without objection your statement will be placed in the record.

(The statement referred to follows:)

THE URANIUM MILL PROPOSAL OF THE GAS HILLS URANIUM CO.-FEDERAL URANIUM CORP.

On some rare and unusual instances in the development of events, a situation presents itself where basic instincts of justice and equity rebel at the results of the application of official policy to a specific situation which has developed as the result of earlier stages of that same policy. Frequently in such instances, the adjustments of policy resulting from the rebellion of fair-minded men gives rise to a policy of much greater wisdom and general and public good than the policy which brought about the adjustment. Such is the situation with respect to the Gas Hills Uranium Co. Federal Uranium Corp. under the Atomic Energy Commission policy as established in October of 1957 and interpreted since that date. Such may well be the result if existing policy, as presently interpreted, is adjusted in accordance with the thinking of reasonable men and with the demands of basic justice.

The Gas Hills Uranium Co. developed, by the effort and courage of a single man, who, against untold discouragement, pressed forward, based on representations of the Atomic Energy Commission, only to find himself blocked by the last-minute changes in policies of the AEC. Faced with a discontinuation by the Atomic Energy Commission of its practice of purchasing uranium ore at its buying station at Riverton, Wyo., and informed by that authority that it demanded uranium concentrate and not uranium ore, he bent his efforts in the direction of obtaining a uranium mill. He was informed by the Atomic Energy Commission that a contract for the purchase of uranium concentrate would be available to him if he proved sufficient reserves, obtained financing necessary for mill construction, and presented a process for extraction that was technically and economically feasible. With this assurance, he formed the Gas Hills Uranium Co. and transferred properties to it. He received the money of numerous investors who had faith in him, the properties concerned, and in the future of the industry, under publicly announced policy. He acquired further properties by location, applying to the task all the vision which he pos-

sessed and all of the knowledge which he could gather. Further properties were acquired by purchase, for money and for stock in the corporation. When the difficulty of the situation began to appear, small independent owners and producers who were unable to longer operate their properties, turned to him and, in exchange for stock in his company, allied their fortunes with his and looked to the success of his efforts for possibility for recompense.

Mr. Ferguson, recognizing the elements which were missing from his organization, such as financing and technical knowledge, associated himself with an aggressive organization to supply those elements. The two organizations moved forward to meet the call as independent uranium operators. Extensive exploration was carried through; financing was assured; a mill proposal was prepared and presented to the Atomic Energy Commission, a proposal which, so far as they have been able to learn, is eminently satisfactory in every respect. Having accomplished all that had been specified to them as being necessary of accomplishment and being prepared to hazard extensive money and all of their efforts on their ability to successfully and efficiently mine the property and process the ore into concentrate, and seeking only the promised and assured market for the concentrate—they were informed that policy had changed and that uranium concentrate was no longer desired.

Unlike many organizations in the field who have other interests and with whom uranium activity is only a phase of a wide field of activities, substantially the entire interest of both Gas Hills Uranium Co. and Federal Uranium Corp. is centered in the uranium field. Its very existence depends upon realization of the objective which it previously adopted. While Federal Uranium operates another mining property in another State, it is at the mercy of a mill operator, and its continued successful existence depends upon the establishment of this mill, and that was its primary objective in entering this field.

Gas Hills Federal Uranium, after expending large amounts of money and making an excessive effort to reach their present position, are placed, for the purpose of their very existence, at the mercy of others, having relied on assurances that this would not be the case. They own the largest amount of property of any organization in the area. With only a small fraction of their property explored, they have proven over 1 million tons of ore. A large number of investors face profit or substantial loss of moneys invested. Former independent owners, those who efforts transformed this Nation from one not possessing uranium to one possessing an apparent abundance, look to it for any compensation they may receive for their efforts. The merits of the proposal advanced, and their ability and financial stability, have not been questioned. In the face of a recognized need for assured and sustained production, it, as much or more than any operation in the area, gives assurance of sustained production. With efficient extraction employed, and full utilization of reserves, its operations can continue far into the future. Such full utilization can be accomplished only by producing for its own mill. It is no answer that a market, to some degree, may be available at other mills. A producer for the mill of another is at the mercy of that other, and past and recent history has shown that the millowner, faced with his own needs and demands, is not unaware of the possibilities of the situation; either the ownership of the independent property ceases or productive activity upon it ceases.

A choice is presented and available to the Government: Shall it disregard assurances given and, in exercise of the power which it indisputably possesses, turn its back upon those who have placed full reliance upon representations by it made, in pursuance of a policy of immediate expediency; shall, it rather, adopt a long-range policy of sustained production, based upon the results of those who clearly acted upon its representations, and thus assure a continued supply to meet the increasing power demands of the future and keep faith with those who furnished to it that which it announced it so desperately needed; shall it disregard assurances given; or shall it move forward in good faith and establish policies which will permit the survival of organizations which have been built on their assurances?

No such choice is available to the Gas Hill Uranium Co—Federal Uranium Corp. organization. They are prepared to accept the ordinary risks of doing business and assume the burden of making their efforts successful. They are prepared to contribute to the economy of that State which has long awaited such development. The time for choice has passed. It ceased to be present when direction toward mill was taken. The entire organization has been geared to that ultimate objective. Without it, the organization ceases to exist. They have made commitments, based on assurances, which they cannot retract.

HISTORY

The Gas Hills area of Fremont County, Wyo., is a land of sagebrush, of rolling hills, of sudden gullies and abrupt upthrusts. Prior to the discovery of uranium in 1953, it was a remote area, 50 miles from the closest town, known only to the sheepherder, the cattleman, and occasional oil-exploration crews. It was a land of extremes of weather, with severe wind, and treacherous in suddenness and severity of cold.

Public announcement of the discovery of uranium there was made in August of 1953. Shortly after that, Cotter Ferguson, an amateur, one unknown to mining and geology, but attracted by the situation, came to the area and commenced prospecting. He located one group of claims which proved to possess one of the major ore bodies in the area, and the income from that property, in the early days, gave him the means to move farther into the field.

With the vision, courage, and imagination characteristic of Americans in time of testing challenge, he broadened his grasp of the field. Further claims were located. With the establishment of the Atomic Energy Commission ore-buying station in Riverton, he aimed toward production and sale of ore from properties discovered. That station, in its early period, announced a willingness to contract for all ore produced, and it purchased from producers all ore offered.

Cotter Ferguson early recognized that the investment necessary for a stable and successful operation was too great for one individual to carry. At about the same time, a modification of the ore-purchase policy of the Atomic Energy Commission, by which ore purchases were to be drastically limited, was put into effect. The Commission announced that it would not provide a market for an established mining operation; that its policy was only to provide by ore-purchase capital necessary for exploration to prove reserves required for a mill, and that it was interested only in uranium concentrate. It adopted a quota system for the purchase of ores, and the quotas allowed were not sufficient to sustain any stable mining operation.

Having acquired substantial properties, and seeing the trend of developing events, Mr. Ferguson sought the advice of Atomic Energy Commission officials at Grand Junction, Colo. He was there informed that that which the Government desired was uranium concentrate; that its entire efforts were directed toward acquisition of that concentrate; and that its ore-purchase program was only a means to the accomplishment of that objective. He was assured that if he could prove upon his property ore reserves adequate to assure successful operation of the mill, and if he could present assurances of financing necessary for its construction and operation and present a process that would efficiently extract the concentrate at a cost economically acceptable to the Government, the Commission would contract with him for the purchase of the output and it would assist him, within allowed official limits, in the process.

Seeing that only here did any future exist in the field, Mr. Ferguson established the Gas Hills Uranium Co. A public offering of stock was made, investors' money was received, property was transferred to the corporation. Some exploration was commenced, and efforts were directed toward the acquisition of further properties.

Mr. Ferguson, personally, and the Gas Hills Uranium Co., had many opportunities to dispose of the property concerned and at prices that might have seemed attractive. That, however, had not been the purpose of the organization. No dynamic industry could develop from such sales and, likewise, such transactions would have defeated the purpose of organization. Relying fully upon the assurances given to him and, further, by the continued public affirmation of the policy by the Atomic Energy Commission, he maintained the direction originally established.

Of those organizations seeking alliance with his company, the one which most completely answered the needs, in seeking the milling arrangement, was the Federal Uranium Corp. It possessed experience in the field, and business and financial means and stability. All of its resources were centered in the uranium field. It, a mining operation, producing for the mill of another, recognized that the success of its future depended upon its obtaining a mill. It was willing to recognize the integrity and accord a continuing existence and identity to the Gas Hills Uranium Co. Alliance was made between the two organizations. That alliance was motivated, and the terms governed, solely by the common objective and by the mutual recognition of the fact that only by realization of that objective could continued existence and a chance for a successful future be assured.

Aggressive exploration was commenced. Further property acquisitions were made. Smaller individuals and organizations allied themselves, for they saw in this organization greater recognition of their identity and greater chance for compensation than had been accorded them at other hands. At the same time, work went ahead rapidly on the mill proposal. Plans were drawn, flowsheets were prepared, technical data was assembled, cost analyses were made. When all was prepared, and after a very substantial expenditure, the proposal was presented to the Atomic Energy Commission. Since that time, no progress has been made. No negotiations have been permitted. Costs continue, exploration must go forward, and property rights must be maintained. Business decisions must be made, and the essential factor to govern those decisions, the availability of the milling contract, is absent and will not be accorded.

Individual initiative has done its work; organized private business has performed its task; technical knowledge has made its contribution; all are prepared to proceed under the risks normal to business ventures; all of this has been done in response to requests made by the Government; yet, in face of all this, the Government, having laid the heavy hand of paralysis upon the developing venture, stands in indecision, and the time runs out.

THE PROPERTY

The Gas Hills, of Fremont County, Wyo., as it is considered among mining interests there concerned, consists of four general areas—west, central, east, and northeast. The divisions, of course, are artificial, and the areas merge into each other. The several areas have developed and received classification, and ore bodies of significance have been developed within them. Each of the areas has been developed through the efforts of one or two companies initially. The holdings of some of the organizations are confined to one area alone. Some are interested in two of the areas. The Gas Hills-Federal organization is the only organization with substantial holdings in all of the areas.

Over 3,000 mining claims are owned by the Gas Hills-Federal organization. Some claims are fractional and not full size. The great majority, however, are full-size claims. When it is considered that a full-size mining claim is 600 by 1,500 feet, and contains slightly over 20 acres of land, the amount of the land owned becomes truly impressive. The burden of ownership more clearly emerges when one realizes that $100 per claim, or $300,000 per year, must be spent in development of this property, under applicable mining law.

The location of the claims, in view of the development already accomplished in the area, is of great significance. The claims are located in all four of the areas and they cover the heart of those areas. When their location is considered in relation to other mining properties, the great importance of the property begins to emerge. Attached to this paper is a map of the property concerned. It shows the location of the various claim groups, the number of claims in the group, and the location of the various other mining properties which have seen varying degrees of development.

It is readily apparent that no real development of this area can take place without development of these properties. The Government has long realized that the exploration for and the discovery and development of mineral resources is vital to the welfare of the Nation. It has also learned that true conservation of those resources is necessary; that conservation consists of efficient extraction and wise utilization. It has learned, further, that the time of need arisen is too late for discovery and development and that the world, and the preservation of the Nation, does not wait. True development of this property, through utilization of the mineral reserves, cannot take place unless the organization can produce for its own mill. To say that property of this extent, promising, in early exploration, the reserves already proven, must be subsidiary to and at the mercy of a smaller property is to speak folly.

The amount of property owned bespeaks the motive which has inspired the organization. The cost of acquisition, of exploration, and the cost of maintenance clearly show that, here, all efforts have been directed toward the final end of production of uranium concentrate, and production of that concentrate in a manner which will provide business stability and assure to the country a long-range and continuing supply of the materials for power. That was the incentive held out to the people who directed the enterprise. That has been their one impelling motive and, by that motive, the building of the entire structure has been governed.

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THE INTERESTS CONCERNED

In the early stages of the uranium activity, uranium stock fell into disrepute because of some unscrupulous promotional practices. Underneath such activity was developing the healthy structure of the industry. Investors looked for sound companies whose basic purposes indicated health growth. They, as always, supplied risk capital, which is so vital to the development of mineral resources. Many of these investors learned of the long-term objectives of the Gas Hills Uranium Co.; they found the management good and its ideas, under announced Atomic Energy Commission policy, sound and worthy of support. They invested their money in that enterprise. Attached to this paper is a list showing the number of Gas Hills Uranium Co. stockholders in each State.

When the ore-buying practice of the Atomic Energy Commission at the Riverton ore-buying station was changed, and purchase quotas were established, numerous small operators were forced to discontinue their operations; this resulted, of necessity, for, when they could produce in from 3 to 5 days all of the ore which they could sell in an entire month, they could not maintain a mining crew or support the equipment and expense required in the operation. No economic level of production could be established. This practice was enforced by the Atomic Energy Commission, according to its official pronouncements, so that the industry would stabilize on a milling and not on a mining basis. Hence, those small and independent operators who could not continue and who could not seek a milling operation sought alliance with an organization which could supply such an operation.

They found that organization in the Gas Hills-Federal operation. Shown as a part of the list above referred to is a list of the several formerly independent operators who have joined forces with and transferred their property to this operation. Some sold outright for stock in the corporation; others received stock and retained a royalty on production.

All of these people—investors, claim owners, and former producers and operators—are dependent for return of their investment and for compensation for their efforts upon the successful operation of this venture. It may be said safely that few, if any, would have transferred their property and thus irrevocably changed their position if this organization had not been seeking a mill and if they did not believe that such a mill was available. The Gas Hills-Federal operation would thus have extended its resources and taken on the heavy burden involved only in reliance on the availability of a milling contract. In view of positive representations made, no one can say that the reliance was not justified.

Here, then, is presented a substantial operation, but one made up of many small parts. Its composition has been dictated by one aim: its life is made dependent upon the accomplishment of that aim; each part involved has so irrevocably changed its position that no return is possible and complete destruction is the result of nonachievement. If this were a field of free choice, the complaint at unfortunate results would receive small attention. Where, however, the entire field has been and is controlled by the Government, and all conditions prescribed by it have been met, the extending of the means of final accomplishment cannot be withheld.

THE ORE DEPOSITS AND EXPLORATION

One of the prime prerequisites to a milling contract, as established by the Atomic Energy Commission, was the proof of ore reserves sufficient to justify such a contract. The Gas Hills-Federal organization embarked upon an intensive exploration program. To the present time, they have drilled approximately 512,600 feet of exploratory drilling. In so doing, they have explored only 5 percent of the property. The investment in this exploration alone exceeds $360,000. By this program, they have proved in excess of 1 million tons of ore of 0.26 grade. If that grade were to be lowered to 0.15 or 0.10, the reserve would be substantially increased, and, in producing for their own mill, it could be so lowered.

The ore deposits thus proven are, in the main, susceptible to open-pit or strip-mining operations. Some exploration has been made of deeper deposits and drill holes have cut substantial ore horizons at depths of from 600 to 1,000 feet. It appears that present and immediate demands for uranium can be met from the shallower deposits. The future and sustained supply, the long-term operation, will come from the deeper beds.

It is, of course, elementary that the cost of mining the deeper beds will be substantially greater than that involved in the open-pit operations. The ex-

tent of the shallow deposits, however, may defer the day when necessity forces resort to the deeper beds.

Only with a mill in prospect could this exploration have been accomplished. In thus encouraging such expenditures, the Government has, whether intentionally or not, induced substantial expenditures by holding forth the incentive and, on having received the knowledge of the existence of the ore, suddenly withdrawn the incentive. That this should be done is intolerable. That further exploration will be undertaken without the assurance of a market existing through their own mill is patently unthinkable.

Little doubt seems to exist that the future will demand stable and continuing supplies of uranium concentrate. A milling contract held by this organization will assure the further and exhaustive exploration of all of the property concerned in search for its mineral resources. It will assure, further, that management can make the equalization between low-cost and high-cost mining which will permit utilization of deeper lying ore bodies and a steady supply of uranium concentrate continuing long into the future. Of the vital importance of this supply to the future, let history be the witness.

A COMPARISON

The Gas Hills-Federal organization does not wish to speak unfavorably or to detract from any of the other proposals which are pending. All are more or less meritorious and on any reasonable evaluation of the ore reserves of the State of Wyoming and the future power demands as presently foreseen, all should be granted as requested. Some consideration, however, of the equities involved in the respective proposals may be of passing interest.

One contract has recently been granted and executed for a custom mill in the area. That mill will provide a market for certain scattered producers and for certain ores not amenable to processes proposed in other mills. Any additional market for ores produced is good and none can question the judgment of the Atomic Energy Commission in entering into this contract. Likewise, the operators of that mill, since they already own and operate a mill in an adjoining State, are to be congratulated upon their courage and foresight in providing this additional service for the Wyoming area. At the same time, since the owners of that mill own no property in the area, have no investment in the mining fields, have in no way extended themselves in reliance upon its availability, have incurred no detriment in reliance upon the representations made by the Atomic Energy Commission, and have no others dependent upon them for return of investment in the field, the proposals of those who are in that position of extreme hardship should be considered with greater favor and cannot be denied.

Five proposals are now pending before the Atomic Energy Commission. Of those, two are proposals for expansions of existing mills. One of those mills is in operation and one is scheduled to commence operation on March 1, 1958. Their existence and successful operation, subject only to their own abilities of management, is assured. The obligation to them has been met. Additional capacity granted to them will mean that the price assured to them under present contracts will probably be reduced. A substantial amount of additional capacity, then, would be given to them at no increased benefit. The question may be asked of whether uranium concentrate could not thus be procured more cheaply by the Government. Without admitting that to be true, and the truth of that premise is not admitted, it is sufficient answer to say that the broken faith to all others, if this should deprive others of a contract, is too great a price to pay for the savings involved.

Of the three remaining parties, one already has a mill in operation in an adjoining State. It is a subsidiary of a larger and diversified operation whose interests extend to many fields. It has few independent operators dependent upon it for support. Denial of its proposal, while detrimental both to the company and to development of the area, is not destructive of the organization.

Another, while meritorious in itself, is allied with a company whose interests extend throughout the field of business. It already owns and operates three uranium mills. Denial of its application would be destructive of the interests of the property owners; it would be a matter of small moment to the other party.

The Gas Hills-Federal organization stands out in the equities of the situation. It, alone, is centered entirely in this field and is without means of substance or life if its proposal is not granted. It has no diversification of interest, activity, and resource to absorb the loss involved. Its future and its very existence is centered in this problem and proposal. No other proposal has the interests and

future welfare of so many dependent upon it. It, alone, can say, without reservation or equivocation, that it has pledged its entire substance upon the integrity of the representations made to it by the Atomic Energy Commission.

It would indeed be unfortunate, if choice must be made between the applicants. All have proven their right to a milling contract. If, however, such choice must be made, the position of none is so strong nor the worth so compelling as that of the Gas Hills-Federal proposal.

THE NECESSITY

The making available to the Gas Hills-Federal operation of an adequate milling contract is a matter of stark and pressing necessity to that organization. Only by producing for its own mill can it plan and stabilize its operations. Only in that manner can it efficiently and economically utilize all of its mineral reserves. The possible existence of some market at the mill of another is no answer.

It has been said that the Atomic Energy Commission is interested in the welfare of the independent producer; that in the past it has exerted great efforts to protect the rights and identity and preserve the existence of that class of operations and to a great extent that has been true. It has been further suggested that it is preserving the identity of the independent operator and affording existence to him, by making provisions in mill contracts granted for a certain portion of the mill capacity to be devoted to the purchase of custom ore. Whatever the situation may be as to an individual producing a small property, such arrangement presents no solution to an organization such as the Gas Hills-Federal organization. It would so limit the production of the property and so render it defenseless against the powerful weapon placed in the hands of another that continued existence would be impossible and destruction would be the only result.

Assume that an operator is operating a mill with a capacity of 1,000 tons a day. He is required to purchase 25 percent of his capacity, or 250 tons per day of custom ore. He cannot be expected to purchase ore which cannot be treated by the process he employs, nor can he be expected to purchase ore which can be processed only at greatly increased cost. The ore purchased must be technically and economically amenable and he is the judge of that amenability. Likewise, many properties are seeking market for ore and he cannot be expected, or permitted, to devote his entire custom capacity to 1 producer; any 1 producer could expect, at the most, 25 percent of that capacity. The decision as to who, among several producers, will receive a production quota, and the size of the quota to be granted, and the conditions under which purchase will be made, is that of the mill operator.

The reserves of the Gas Hills-Federal property, as presently known, with only a fraction of the property explored, are sufficient to support a mill of 500 tons per day from its own property and without any custom ores. In the situation as given above, it would have possibly available to it a market for a maximum of 60 tons per day, and that market would be available only at the will and discretion of the other mill operator. Should that operator decide that the property of the producer is desirable, the means of placing that property in such condition that it would be available upon any terms desired are ready at hand.

The history of mill operations which have been in existence is characterized by a changing policy of quotas allowed to independent producers, of increasing severity in the grade of ore which will be purchased, of increasing conditions and restrictions upon purchase. More than one instance can be found and others are in the offing, where a property owner has stabilized mine production at a level consonant with quotas granted and had that quota decreased and decreased again, and finally eliminated entirely. Many instances can be found of sales of property because without such sale, no market for ore would be available.

Such, without a mill, would be the prospect facing the Gas Hills-Federal operation. They have steadfastly refused offers to purchase because of their firm belief that a milling contract would be available in accordance with assurances given to them, and because of their fixed desire to maintain and foster an independent, if small, operation. Their structure and their investment and commitments have been dictated by that policy. Denial places them at the mercy of those more fortunate and affluent ones whose offers they have already refused.

It is well known that an open-pit operation such as is required in the Gas Hills area requires the use of heavy equipment and that up to a certain point, the cost of the operation decreases with the amount of the production. Likewise, efficient mining practices require that excavation and production be de-

signed far in advance and that the particular deposits be given consideration in entirety in the mining schedule. Such planning can be done, and costs can be kept within a practical range, only by the assurance of a continuing market for ore and in such amount as will justify the investment and continuing costs. Elimination or curtailment of the market, after design has been developed and excavation commenced, can mean that the entire operation has resulted in substantial loss and the adopted design become useless. The stability and permanence necessary to support an efficient mining operation on property of the amount here concerned can be found only in a mill upon the property owned and operated by the same interests. Only in this manner can production and consumption be harmonized into economic balance.

Another factor is of great significance, not only to the organization but also to the public interest. It cannot be disputed that a mill, in purchasing custom ore, establishes a cutoff point in mineral content substantially higher than that which it can efficiently process. Most mills are capable of profitably processing ores at a mineral content lower than the cutoff point established for custom ores. Few mills purchase ore from custom producers at a grade of less than 0.17 and some establish the cutoff point at 0.20. The Gas Hills-Federal organization has proven reserves in excess of 1 million tons of a grade averaging 0.26. If they were to produce for a custom market, if they could survive in so doing, they could produce in excess of that amount, but ores which drop below the specified cutoff point could not be accepted. Such ores would be left in the ground. Being of lower grade, they could not be later extracted and would be lost forever. Producing for their own mill, they could extract and process all of that additional lower-grade ore in the same operation and such extraction, then, would be economically feasible. The fatal folly of such waste of our mineral resources has too often been proven to this Nation in the past.

Gas Hills-Federal Uranium property is a property which could support a mill of a capacity of between 750 and 1,000 tons per day. A 500-ton-per-day mill is a matter of survival. If such a mill is denied, it must mine the best of its ore and attempt to find a market for its sale sufficient to permit it to salvage a part of the loss which it will suffer. It will have no assurance of any continued market. It will be unable to plan an efficient mining operation. It has no future, save the attempt to repair to the extent possible, the great damage done to it. With the 500-ton-per-day mill—and it has proposed the minimum necessary for survival—it can plan an efficient operation, continue its exploration for further reserves, establish the foundation for a long-term operation, and be in a position to move into the full production and take a part in the expanding future of the production of uranium for a power market.

CONCLUSION

The Gas Hills-Federal organization presents an enterprise which has grown from and with the uranium industry. It is part and parcel with it and has no existence outside of that field. In the present distressed condition of the production phase of that industry, it is most distressed and it presents the strongest and clearest case for the making of an exception to the recently announced policy of the Atomic Energy Commission.

The United States today stands as a nation with a present abundance of uranium, an adequate supply of nuclear weapons, and a supply of uranium concentrate sufficiet to meet the demands of that nature for the foreseeable future. That it presently occupies that position cannot be doubted, nor can it be doubted that it does so occupy that position only because of certain individuals who heard and listened to its call of distress and responded with the commodity then most sought.

The position resulted from the efforts of no one man. It came from the prospector who was willing to disregard all knowledge and rely on his own imagination, ability, and hardihood to find the ore; from the small individual who would attempt to solve early problems of production and prove the further presence of additional reserves, hazarding his time and strength and financial resources in the project; from the investing public who would advance risk money to supply capital needed to carry the development further; from established business interests who would take the great chance involved and risk their manpower, equipment, and finances in hopes of gain; from the men of vision and imagination who would see and organize the business organizations necessary to produce the

needed materials; from the Atomic Energy Commission and its force, who supplied guidance, assistance, supervision, and direction to the overall effort.

With the exception of the Atomic Energy Commission, all of these groups and forces are represented in the Gas Hills-Federal organization. More than any other organization in the field, do they represent and present the united efforts of the prospectors, the independent operators, the small and large investors, the business organization, and all of their energies and interests are concentrated in the uranium field. This organization, more than any other, has responded wholeheartedly to the requests, the representations, the inducements, issuing from the Atomic Energy Commission. So great was its response that it now stands at the point of decision between existence and destruction. It has followed the changes in practice, the fortunes in the field, and it placed its entire reliance upon that which was announced as the ultimate goal in this segment of the program—the production of uranium concentrate. It has fulfilled every requirement of ore reserves, of sufficient property, of financing, of production that is feasible technically and economically.

It stands at this place because it placed its entire reliance upon the solemn and definite assurances given. Without them, it would not have taken the action which has rendered it so vulnerable and its present position so precarious.

Justice, equity, a well-advised sense of the public interest demand that this organization be accorded the means of survival necessary to permit it to enter into whatever activity the future may hold with some integrity of organization and some minimum opportunity to find a place in the new field which it has helped to create.

Chairman DURHAM. You may proceed as you desire, Mr. Ferguson.

Mr. FERGUSON. I am Cotter Ferguson, president, Gas Hills Uranium.

Chairman DURHAM. Where is that?

Mr. FERGUSON. Riverton, Wyo.

I represent and am speaking in behalf of the mill proposal that is now pending before the Atomic Energy Commission, known as the Federal-Gas Hills uranium mill proposal.

According to my brief I and several associates ventured into the uranium business back in 1953 after the first announcement of discovery there. That is something of a generous interpretation.

Actually, my wife forced me. She gave me a choice of several places I could go and I chose the Gas Hills.

We were fortunate to have made a discovery almost immediately—probably doubly fortunate in view of my wife's attitude.

Chairman DURHAM. She must be a good businesswoman.

Mr. FERGUSON. She is. Here I am.

At that time we found after we made our discovery, which was of considerable importance, incidentally, within the Gas Hills, that there was no immediate market, that to acquire a market there had to be sufficient reserves to induce the Government to build a buying station or someone or another company to enter into a milling contract with the Government.

But we were truly enthused to say the least, about the prospects of uranium, the prospect of power, the potential of the whole program, and we continued.

We continued to acquire and eventually there were sufficient discoveries made to allow an announcement by the Atomic Energy Commission that there would be a buying station in Riverton.

We acquired enough properties about that time, had enough information and experience to realize that we were not fortified with the moneys to carry on a proper program.

So, approximately the same time, we decided to incorporate. We made a public offering of stock. This offering was, incidentally, sold

by the directors without the benefit of the brokers. We felt that in that way we could put more of the money back, do more of our stockholders considerably more good by using that for exploration and acquisition.

We had a surface deposit of uranium ore that we thought we could mine and thus maintain such an exploration and acquisition program, but about the time we started our mining program, the Riverton buying station, the Government, through AEC, put us on an allotment basis, 500 tons a month, month by month.

Now, we did find this surface deposit was not too rich, but we had in our exploration found a much deeper, better ore body of approximately 150,000 tons. But it was in the neighborhood of 200 feet deep.

Gentlemen, we simply could not consider spending, possibly, as it was suggested that it would cost by mining engineers then, a half million dollars to open up a strip mining situation and maybe from month to month take out 500 tons and maybe the next month no tons.

We realized the dynamics of the whole situation. We realized that we could not come from a have not Nation to a have Nation, with respect to uranium, without being confronted, the Government and AEC, with any number of problems.

I do not believe that we had the feeling that there were inconsistencies, that we were being mistreated. We accepted these problems as part of the risk, part of the whole situation at that time.

But we did realize that we had to formalize a program, we were a company, an intelligent program that we believed sincerely had a future. We did this.

As far as the history of mining is concerned, it was very apparent that to be successful you had to enter into a milling-mining integrated business; that one could not hope to be successful without the other.

We wondered how best we could approach this. We realized we would be short of capital for milling and a truly big mining operation.

So we decided upon several approaches. No. 1, we felt that we must have and associate ourselves with a company financially able and capable of carrying out such a program.

Secondly, that we had to make acquisitions, do sufficient exploration on our own, to interest such an outfit.

We did that. We spent all our money. We explored, we found more ore, and we acquired.

Now, if you care to, at the back of my brief is a map that will give you an idea of our present holdings within the Gas Hills. I would say that our acquisitions actually amount to about this:

We control or own approximately 50 percent of what is considered the mineralized area of the Gas Hills, much more than anyone or any combination of other companies.

Our potential in that area is terrific. We have actually explored less than 5 percent of our holdings. We have in proven ore over a million tons averaging twenty-six one-hundredths of 1 percent U_3O_8.

We have over another million tons averaging the same grade that is indicated. This, we feel, is only a start.

Now, we acquired these properties by expenditures of money and also we realized this: In the Gas Hills you had many, many prospectors that located individual groups of claims or several groups. You had

companies smaller, the same size as ours, regulation A, that were confronted with the same problems.

We realized it was a problem for AEC. If there were a dozen or two dozen strip-mining situations there, the likelihood was that the Government would be flooded with excessive ore that would be stockpiled and it would cause considerable trouble.

So we approached many of these people and in exchange for stock we absorbed these companies and these smaller people.

The only chance they have for a return, for a return on their investment without appreciation of their investment, and the one chance for appreciation in their investment, they felt, was associating themselves with our company, and this they did.

I am going to cut this somewhat shorter because I carried on in somewhat more detail than I hoped to, but I did want to bring this to your attention, that when we offered this mill proposal we did not try to see how large a mill we could have. We minimized our mill proposal.

We believe in the future of uranium. We believe 10 years from now the ore which we presently have will be worth some more. We feel we must have for survival this 500-ton mill proposal that is before the Atomic Energy Commission.

Fortunately for them, a lot of these other companies have diversified interests. Uranium in itself is just one facet of their operations. Both Federal Uranium and Gas Hills Uranium are companies that have completely, solely, put everything they have into the uranium business.

Our survival, our existence, is dependent upon it.

Thank you.

Chairman DURHAM. Thank you very much.

(The following supplemental statement was submitted by Mr. Ferguson after the close of the hearings:)

This, then, is the general situation which the Federal Uranium—Gas Hills Uranium now faces. It is prepared to venture its property and holdings in the Gas Hills area of Wyoming, to obtain and invest all necessary money, and to assume the risks of management and successful operation of the mining property and the construction and operation of the mill. It is prepared to proceed immediately. It asks only that the market which was previously assured to it be accorded.

The delay to the present time has been costly and will become more costly. Assessment work requirements and the expense of properly maintaining the claims is tremendous to an organization as small as it is. Such expenditure can be justified only if some hope of return is present. The expenditures, nevertheless, must be made if the property holdings are to be maintained.

It must move forward or give up. To move forward it must organize and plan its operations and have some assurance of a cash flow to sustain the burden. Only by integrating the milling operation with the development of open-pit mining and underground mining anticipated in the future can it plan its operations on any efficient basis and one that makes sense from a business standpoint.

Some companies find sufficient answer in a market for their ore, only. Such is not the case with this organization for it has planned its entire program and based its entire structure upon an integrated mining and milling operation. Nothing short of its own mill, operated on its property furnishes any satisfactory answer. It was assured that such a mill would be available and made its plans accordingly. It faces destruction unless those assurances are given effect.

Chairman DURHAM. How much have you spent so far?

Mr. FERGUSON. Sir, we have spent in the neighborhood of $300,000. We have spent all our cash. We have exchanged for properties approximately 2 million shares of our stock, our treasury stock.

Chairman DURHAM. What is it selling for today?

Mr. FERGUSON. Thirty cents.

Chairman DURHAM. At what did it start?

Mr. FERGUSON. Ten cents.

Of course, these people, many of them have associated themselves with us, have associated themselves at the higher level. I do not want you to misunderstand that they have already received that much appreciation. They have not.

The original ones, some of the first, did, acquired their stock on the basis of exchange for 10 cents.

Chairman DURHAM. Can you tell us how many people that have claims on the land exchange claims on the land they owned for stock?

Mr. FERGUSON. I would say in the neighborhood of 40 people, or companies.

Chairman DURHAM. When you say companies, what do you mean?

Mr. FERGUSON. In the early stages of the uranium business there were many small regulation A companies that capitalized at $300,000 supposedly. Unfortunately, there was some adverse publicity that did not enable all those companies to realize a $300,000 fund.

Some of them had $25,000, $50,000, $100,000, but they were still in business. They found themselves short; they found themselves distressed. And they did feel they were aware of our operation, of our management, and they felt it was sincere.

They joined us; they had the greatest opportunity for a return on their investment.

Chairman DURHAM. Thank you very much.

Congressman Thomson I believe is ready to proceed.

STATEMENT OF HON. E. KEITH THOMSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WYOMING

Representative THOMSON. Mr. Chairman, I would like to ask permission at the outset to revise and extend my remarks.

At the outset I want to congratulate the committee on going into something that is a very important and pressing problem, not only from the standpoint of the producing areas, but I think one that is important and pressing from the standpoint of the future interests of this country.

You have already heard from the fine Governor of Wyoming, from our excellent Senators, and from the witnesses representing producing companies.

I am sure that I will not be able to add a great deal to this fine array of technical testimony that has come before you.

We have very fine companies that have made applications for additional mill proposals and I would hate to be the one to select among them should that become necessary.

I am going to devote my few remarks to the overall problem and to some suggestions from various experiences that I have had in this industry, from the investigative standpoint, in that it has grown up while I have been Congressman, and extraneous experiences before coming to Congress, that I think might be helpful.

Also, at the outset, I would like to say that I appreciate the difficult problems that face the Commission. Very frequently over the past 3 years that I have been in Congress, which happen to very closely coincide with the development of the uranium industry in Wyoming, I have contacted Mr. Jesse Johnson, and in so doing I have always found him to be fair. I have found him to have at heart the best interest of the industry, and I have great admiration for him.

Of course, we cannot always agree with any person, and in some instances I have not agreed with him, but I have never questioned his acting in the best interests of the industry and the country.

The same is true of the Commission, Admiral Strauss, in particular, with whom I have had more occasion to speak directly. I appreciate that they were up against the blaze here in that some things happened that they did not expect to happen, and I am not going to be the one to say now that they should reasonably have expected them to happen, although later on I may question that.

The point is that I believe at the present time they recognize the nature of the problem that has been created.

I think they recognize hardship cases and that they are trying to come up with something to solve these. Until they come up with their solution I would not be one to criticize them, because I think they are making a real effort to come up with a reasonable solution.

But that does not relieve Congress of its primary responsibility.

For that reason, I particularly want to congratulate this committee at this time, even before they have come up with a suggested solution of the problem, and by they, I mean the Atomic Energy Commission, for your taking the time, Mr. Chairman, and members of the committee, in your annual hearings, to go into this, and, furthermore, indicating you will go into it again after you have their suggestions. Too often it has been shown that we have failed to plan in advance, that we have failed to recognize some things that should have been taken care of, and I do not refer to the field of atomic energy, but I want to congratulate you for getting to work on this, because I believe it is going to take the best thinking of all of us.

Now, this problem, as I see it, divides itself into two separate problems: In the first place, due to change in supply, followed by the change in policy as announced and interpreted from the Johnson statement of October 28, we have emergency hardship cases that it seems to me must be taken care of in all events.

In the second place, we have the question of future long-range policy for this country.

Let us first take up the hardship cases. I think that something must be done about these quickly. At the Government's invitation these people have gone out to do something that was immediately required for the security of this country.

Within the law which I practiced for some time, and I know that members of this committee practiced, we have a well-recognized exception to the statute of frauds that is a well-settled principle of law in that when an individual has changed his position to his detriment in reliance upon an offer of another, then there is a contractual obligation set up which the law recognizes even without a written contract. Such is analogous to this situation in my opinion.

Now, I don't say that the Government has a legal liability, but I think we have a moral obligation to take care of these people who have

invested their capital in this business in response to the invitation and in fact at the urging of the Government.

Chairman DURHAM. I think you are right about that, Congressman.

Representative THOMSON. There is a possible loss here, it has been shown, of tremendous investments. I speak not only for my area.

I have talked to fellow Congressmen and I know there are other hardship cases, too, in various places. These people must make payments to banks and must meet bills and they will not accept uranium ore in payment.

They have to have cash. That is all the banker will take. That is all that will be satisfactory in meeting their payrolls and other obligations.

I have a number of such cases in my files that I will not recite to you because the Governor went into that to a considerable extent.

Also, I would point out to the committee that, these uranium discoveries in the United States have to a large extent been made in sparsely settled areas where the impact of a couple of hundred men being thrown out of work is tremendous upon the economy and that it will provide a boom-bust situation which cannot be tolerated. Something must be done to level this out while we formulate long-range policy.

Then there is supporting investment, trucking contractors, and housing and so on, that could be mentioned.

The interpretation of Mr. Johnson's policy speech of October 28, 1957, as it has been amplified, is that there will be no more milling capacity granted in excess of the current requirements for military and research programs.

My own statement of what I think is necessary is quoted from the Governor of Wyoming's letter of December 28, in which, to a certain extent I defended the past actions of the Commission and past objectives of the Commission. I quote:

> It has long been my contention that we are entitled to and must have an adequate milling capacity to provide for the orderly marketing of Wyoming uranium—

and I would say also other producing States:

> and sufficient quantity that will bring orderly development of existing reserves and to encourage exploration to bring about expansion of the industry to its full potential. I think we have a right to insist upon this, but in so doing I think we must be reasonable; we must be factual, and we must take a business-like approach. I believe reasonable provisions for the hardship cases of the industry in Wyoming and elsewhere are most urgent and necessitate immediate action. These special circumstances arise that Wyoming blossomed as a principal uranium reserve and producer just as the policy of the Commission was changed.

I believe this is recognized by all the people who are familiar with the situation and by you gentlemen, now that you have heard the testimony in this proceeding.

> As a result, Wyoming with a large proven ore reserve, as has been testified to by qualified expert witnesses in these proceedings, has a milling capacity constructed and under contract of only 1,650 tons. This is unconscionable when we consider the investment involved in developing this reserve in response to the Government's invitation and urging. I think Mr. Johnson fully appreciates the hardship cases and the equities involved in treating Wyoming conditions as a hardship case—

as well as some of these other areas of which I have personal knowledge from contacts or contacts with their Congressmen.

I further believe that the Commission has that in mind. As I see it, to correct this problem it would not be necessary for the Commission to change its announced policy all of a sudden to solve this problem in Wyoming and other areas, but only to change the interpretation that has been placed upon it.

In the October 28 statement of policy it was recognized that it would be unconscionable to cut out proposals on which capital had been expended to develop reserves, to finance a mill and engineer the design of the mill. The policy was, therefore, stated that proposals for domestic contracts that were submitted and under review still would be considered in the light of the discussions which have taken place. In most instances these discussions were initiated a year or more ago.

Now, I submit to you that there is no basis for drawing a distinction between those contracts that have been submitted to Washington for review and those that were under consideration in the Grand Junction office or were in the discussion phase in the Grand Junction office.

Yet that is the way the statement was finally interpreted.

Initially, I must tell the members of this committee, I understood that they were going to include all of those that were in the discussion, but that was not the way it was finally interpreted.

In equity the proposals in the Grand Junction office required the same capital expenditures to develop. They had been initiated in all instances, I believe, more than a year ago.

It is my understanding that if the policy was interpreted to include proposals submitted to Grand Junction or under discussion as of October 28, that the most extreme Wyoming circumstances would be satisfied and that the same thing would be true of most other areas, that these were in the discussion phase at that time, and that there would only be possibly a few other proposals to be considered in order to take care of the first phase, the hardship phase of this problem.

I submit this is a reasonable solution to the problem.

Unless this is done, unfortunately those who will be hurt the most will be many who pioneered and contributed to bringing about this major development at the country's invitation and plea, as made by the Atomic Energy Commission, and who thereby contributed to the very security of our country.

Now the second phase is the long-range-policy phase. I do not profess to be an expert. I am not going to take a great deal of the time of the committee to discuss that, but I certainly would agree with Mr. Weller that in considering that phase, and he, I believe, testified as the executive secretary of the Uranium Institute, that we want a deliberate and carefully considered solution.

It is fair to assume, I think, that there shall be a limit on overall funds that are available for an atomic-energy program. Those must be distributed to raw materials, research, development, and other functions that go to make up an integrated future for uranium or for an atomic-energy program in this country.

There is a great danger sign and that sign is that whenever we get into the position of producing for Government storage and not for market, historically we get into trouble, whether it is on wheat, corn, cotton, other of the agricultural products, or whether it is copper,

zinc, tungsten, or some of the other minerals that we are all interested in also.

So I think that should be the danger flag that we should watch.

On the other hand, we either believe we are entering an atomic age that will mean much to the advancement of our standard of living, or we do not. I do so believe.

To those who do not, or do not react at all they have no one but themselves to thank if the Russians come up ahead of us with things that far outstrip the satellite in importance.

If we have confidence, then we must at least do some minimum things in order to build up the necessary beginnings that will bring about that development that can mean so much to this country, and I think will.

There are many things that I think in our deliberate considerations should be considered as possible solutions. No one has a monopoly on the idea that might be the right one. That is why I am so pleased to see this committee is going into it.

I know the Commission is looking into it.

We should in my opinion look at the possibility of cutting loose, at least partially, from restrictions on sales other than to the Government.

There is a possibility of perhaps solving it like the serious problems of the oil industry were solved when I was a young man and people were going broke because oil was 10 cents a barrel and no banker would loan money on it. It would be my hope that private financing could be arranged. It might be that we should consider a Government guaranteed loan program.

But overall we must have it developed in my opinion if it is going to really mean anything, we must have an adequate milling capacity to permit this industry to develop.

Now, the life of a reactor, for example, is estimated at present from 20 to 40 years, as near as I can find out. Whether the source of fuel is coal or petroleum, it has been my experience in the business that a generating plant cannot be justified unless a firm source of fuel supply to amortize the investment is shown.

Yet as reflected in the statement of Mr. Johnson of October 28, at the present rate of consumption we have proven only a 10-year supply of source material.

I do not believe that you can expect private industry to make this capital investment unless the source of supply is expanded.

I further pointed out that in all areas there must be sufficient milling capacity to encourage production of low-grade ore as a matter of conservation of a natural resource.

I believe the commission might consider encouraging the States to adopt conservation laws with regard to production.

As yet I do not believe it should be a matter for Federal legislation.

I have been very much impressed with the similarity of the problems of the uranium industry with those in the oil industry in which I was engaged to some extent before coming to Congress. Obviously, we have a situation of a soft market. We are faced with a pro ration problem.

The solution must permit everyone, large or small, to live and must encourage, but not overencourage, exploration and new development.

In Wyoming we have never had pro ration by law. It has been accomplished by purchasers pro rating in their buying.

It seems to me that the Atomic Energy Commission and the Congress in setting up their directives, must follow the same course of action and must in so doing see that the small independent producer is guaranteed his share of the market.

Accumulations of a reasonable inventory so as to encourage sufficient exploration to take care of the ultimate requirement of peacetime uses seems to me, to be indicated. Otherwise private capital will not put up the research funds or make the investment.

Furthermore, the mining end will deteriorate. Just as in oil, it is the independent prospector who finds the reserves. This has been proved by the fact that the Atomic Energy Commission geologists and other geologists, the best in the business, have condemned such areas as Gas Hills in Wyoming, which ultimately have become our largest reserves.

Most serious, I believe, would be the consequences if we were to destroy the prospectors and operators who have left other pursuits to enter this field. This would in the long run be uneconomical to the Government and destructive to the industry.

As far as defense is concerned, or as far as peacetime development is concerned, I believe it would be detrimental to the uranium industry to build inventory to the extent that we overencourage exploration and production and end up in the position of many other minerals and in the position of agricultural commodities.

The goal must be production for real markets and not for Government storage.

Nevertheless, I think building a reasonable inventory is fully justified.

I understand at the present the Commission has no inventory of fissionable materials except that embodied in the weapons inventory. It is necessary on a very modest scale, in my opinion, to accomplish these objectives that we should build a reasonable inventory.

As I stated at the outset, I believe all these objectives are recognized as necessary to a successful uranium industry in Mr. Johnson's speech of October 28.

The last two paragraphs he specially mentioned certain of these.

I sincerely hope that this will be considered by this committee and, to the extent which the Commission considers necessary, will be implemented into the policy. This is respectfully submitted for the consideration of the committee and I again congratulate you, Mr. Chairman, for going into this at this time, working on it at the same time that the Commission is working on it, and out of it I am satisfied that we can come up with a program for the future that will look after the best interests of this country all the way around, and the industry will also be taken care of.

I have a letter here, Chairman Durham, from John A. Wells, of Dubois, Wyo., addressed to Cotter Ferguson. With your permission I would like to make this letter a part of the record.

Chairman DURHAM. We will insert the letter at this point.

(The letter referred to follows:)

DUBOIS, WYO., *February 20, 1958.*

Mr. COTTER FERGUSON,
Washington, D. C.

DEAR SIR: I have received word that you are going to be with the delegation to meet with the Atomic Energy Committee of Congress. Due to our previous acquaintance, I was in hopes, you may help me in this matter also.

I am sure, you are acquainted with our property, in sec. 29, T. 33 N., R. 90 W., Fremont County, Wyo., which I have been working on for the last year. I have spent all my money, approximately $70,000, in opening an open pit, of 80 feet deep, to the ore. I now have 3,000 tons stockpiled ready to go to the mill, with no mill to buy it. The largest quota I have been able to obtain is 100 tons a month, through Fremont Minerals. As you can see with that type of quota, it is utterly impossible for me to keep the mine open, let alone ever try to get my money back out of it.

I also spent $15,000, blocking out this ore body, which we are sure of an access, of one-half million tons. Now, with no place to sell the ore, I am at a complete loss, as to what to do.

With the 100-ton quota, I now have, it would take me, approximately 3 years to sell the ore, which I took out of the mine in 1 week. At this rate, my mine would be working 7 days every 3 years. Also, my banker, which has loaned me money to open up this mine, has no mercy upon me when the note dates are due. He will not take uranium, but seems to want the cash. Therefore, something must be done, or bankruptcy will be unavoidable.

If you can help me in this matter, I would appreciate hearing from you.

Yours truly,

JOHN A. WELLS.

Chairman DURHAM. Thank you very much for your statement, Congressman.

Are there any questions?

Representative HOSMER. I would like to ask a few questions and ask them of Mr. Thomson because I know he will not infer when I ask the questions that I am not in sympathy with the problems of his people.

I ask him also because I know he is so familiar with the subject.

When these large numbers of people started to explore for uranium, it did not seem that there was in this country the amount of uranium that they eventually did find. Is that not a fact?

Representative THOMSON. The gentleman is so right. At the time that policy was set up the first thing we had to do to provide for the security of this country was to jump out and contract for some of these offshore and foreign deposits.

I think the Belgian Congo is the largest.

Now, those we wish we did not have. We did not know whether we would find it in this country at all when we initially started out.

Representative HOSMER. Then neither the Commission itself, nor the people who went out into this field, had any idea what was there?

Representative THOMSON. That is correct.

Representative HOSMER. The people that went out into the field accepted a risk more or less. They were, so to speak, in a sweepstakes?

Representative THOMSON. That is true, Congressman Hosmer. I certainly do have a high regard for the interest you have shown in this and work you have done on it, as well as other members of the committee here, but here is what really happened:

We started out with a bunch of Sunday prospectors, school teachers that had a weekend off; people in the evenings or on a picnic and anything else. Then as discoveries were made and the principal and most important one in Wyoming has been in the Fremont County and Gas

Hills area, you found people making this their full-time business, in some instances oil and gas geologists coming over and making this their life's work, giving up everything that was behind them.

The Commission was still suggesting that they wanted them to go farther, when the first mill that came in in Wyoming, there was a question of how much bigger can you make it; go out and find some more.

So I think that these people have been led along to change their entire pursuits of life really, and give up their past, giving up their jobs and investing their capital, and it has all been on the basis that we needed it.

Representative HOSMER. But they went out there accepting the risk of not finding anything.

Representative THOMSON. Most of them started out on a Sunday basis.

Representative HOSMER. Yes; it was a kind of "Well, if I hit, I hit good, and if I don't I had a good time."

Representative THOMSON. Yes; and I think it is one of the greatest tributes to free enterprise in this country that they would and could do this.

Representative HOSMER. They accepted the risk in the hope that they would hit, but they did not anticipate the further risk of finding the stuff and then not being able to sell it.

Representative THOMSON. That is correct.

Representative HOSMER. Is that not essentially the situation?

Representative THOMSON. The Government right up to almost October of 1957 kept changing the rules a little bit, but still saying we want it and we will buy it. You go out and find it.

First they said we will buy it in the shape of ore. Then they said we are going to shut down purchasing the ore because it is really the fissionable material we are interested in.

Representative HOSMER. It was a hazardous business at best and I am just wondering, I am trying to justify in my own mind, how we get around the fact that they did not accept all of the risk, whether it was lack of market or inability to find the ore, or whatever other circumstances there might be when we say there is a moral obligation on behalf of the Government and all those things, I want to satisfy my conscience on it.

Representative THOMSON. The best I can do for the gentleman there would be to say that, again going back to the analogy of the exception to the statute of frauds and so forth, after all, our common law has been developed as a matter of public policy.

Representative HOSMER. I understood the argument you made there. They changed their position and again the reason I ask you, whether the Commission itself or anybody anticipated what the situation would be, maybe there is also another rule of law about mutual ignorance of fact that would leave the parties where they were found.

Representative THOMSON. We are not asking anybody to underwrite the tremendous amount of time and money that went into unsuccessful exploration because it is a risky business and they bargained for that.

But the reason that they changed their position is that the United States Government sat up here and said, "We will give you a market

for this until 1962," and then later "1966." That, to me, is an invitation from the Government for them to change their position and I think we must live up to that commitment to them. That is what it amounted to.

It is not worded just exactly that way, but that was generally the way it was put to everybody in the field.

Chairman DURHAM. The Government did the same thing with gold. The Government was responsible for taking all the gold and all of a sudden it shut off all the gold mining.

Representative THOMSON. Yes, there is another factor, too, that we should not overlook, Mr. Chairman. That is that, because of security reasons, the only one you can sell your uranium to is to the Government. They won't let you take that uranium out and sell it on the free market. That is the day I look forward to when we can.

Chairman DURHAM. I can recall the days when we were negotiating with the Belgians, finally negotiated this agreement between ourselves and Britain, that we were getting from three places only 50 percent of it. We had to go to England and beg them to release the ore they had a claim on because they had no use for it, which we used and which was very helpful at the time.

Then the discoveries came along in the West and everybody felt good. I did, myself, because I feel more secure when we have something in our own continent, but in developing this whole thing we have run into this situation.

Representative THOMSON. Mr. Chairman, I would like to say this too, in furtherance to the question of the gentleman from California, that is simply this:

That if I did not have any confidence in the future development of atomic energy for peacetime uses and the development of a market, I would be the first man to come in here and say to this committee, and to say to this Congress, even if it meant not coming back here, that we ought to cut it off right now before any more development took place, because if I am not in this Congress I am going to be back in Wyoming.

If we were to build up an industry and then have the rug pulled out from under us, it would be bad for the State, bad for the country, and everything else, but I have confidence that we are going to have a peacetime market and I think it is good business for the Government to be looking ahead rather than to have another crash program.

Chairman DURHAM. Thank you, Congressman Thomson, for a most excellent statement.

Representative THOMSON. I know all the work this committee has done, and again I congratulate you, Mr. Chiarman.

Chairman DURHAM. Congressman Berry.

STATEMENT OF HON. E. Y. BERRY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF SOUTH DAKOTA

Representative BERRY. Mr. Chairman and gentlemen of the committee, I have a statement which I would ask permission to file, and then add to it a few remarks, if I may.

Chairman DURHAM. Without objection, your formal statement may be included in the record at this point.

Representative BERRY. Thank you.
(The statement referred to follows:)

STATEMENT OF REPRESENTATIVE E. Y. BERRY

About the time AEC made an appeal to Americans for the location of uranium deposits, a search was made and discovery resulted in uranium deposits in the lignite coal deposits in the four-corner area of North and South Dakota, Wyoming, and Montana.

In order that filing could be made in that area, it was necessary to amend the mineral law, since this new uranium strike was in lignite which is classed as a fuel mineral. Congress rushed the law through because of the desire on the part of AEC to obtain greater uranium reserves and because of prospects for obtaining those reserves in this uraniferous area.

It was soon discovered, however, that because of the carboniferous material in the lignite-coal deposits, there was no known process of economically removing the uranium from the lignite.

AEC established a pilot plant at Grand Junction. AEC also encouraged other private organizations to cooperate in the establishing of pilot-plant operations. Among those establishing such pilot-plant operations was the Catalitic Construction Co. and the International Resources Corp.

AEC entered into a contract with Catalitic Construction Co. to negotiate a contract with it, if and when such an economic process could be developed. They worked with the International Resources Corp., but International did not ask for a contract, assuming that with their expenditure of money and their joint cooperation with AEC at Grand Junction that as and when the process was developed they would be given an opportunity to contract for a mill operation.

An economic process has been developed. Catalitic Construction Co. offered to construct a mill and produce the U_3O_8 at $9.64 per pound until 1962, and $8 per above the $10.50 proposal of AEC. When their minimum offer was rejected by AEC, Catalitic stepped out of the picture and International Resources offered to construct a mill and produce the U_3O_8 at $9.64 per pound until 1962, and $8 per pound subsequent thereto.

AEC POLICY

In the interim, however, the policy of AEC was changed. In October 1957 the Commission issued a directive that no new mill should be constructed and no existing mills expanded until a survey had been completed on known reserves and deposits. The results of the freeze order by AEC has been that although more than $2 million has been spent in development of the uraniferous lignite area, claim holders have no outlet even though a process has now been discovered and even though a company is ready, willing, and anxious to contract with AEC for the construction of a mill in this area and the production of U_3O_8 at less than the proposed offer of AEC.

SUMMARY

1. AEC admits that had Catalitic Construction Co. submitted an offer to produce U_3O_8 at $10.50 per pound, that they would be obligated today to enter into a contract for construction of a mill in the uraniferous lignite area.

2. The International Resources Corp. proceeded on at least a quasi-contract, spending many thousands of dollars both in development of a process and in developing reserves. They have made a firm offer with AEC to construct a mill producing concentrates at $9.64 which is 86 cents per pound less than AEC offered to contract with Catalitic Construction Co.

3. It is probable that had International Resources been able to submit their offer for a contract at this rate prior to the AEC October freeze, a contract would have been negotiated.

4. Most of the area is held by small-claim holders. Hundreds of these small-claim holders face having their properties wiped out unless such a mill is constructed to give them an outlet for their ore.

5. There is no mill in the world today which is equipped to process uranium from the lignites. Under the mining law, they are required to do $100 worth of assessment work prior to July 1. This, is spite of the fact that there is at present no hope for a mill which would give any value whatever to their deposits.

RECOMMENDATIONS

1. By virtue of the statements made and authorized to be made through AEC, by virtue of cooperative work on a removal process, by virtue of the action on the part of AEC in their many statements, there was at least a quasi-contract which places the Commission under some obligation to contract for a mill in the lignite uranium area at this time.

2. AEC could and should contract for a mill in that area on an experimental basis, which basis would take it outside of the directive of the Commission issued last October. Such an experimental mill could be designated as a full-scale pilot mill for the purpose of obtaining data and information on cost of processing, improvement of processing methods, and amount of uranium deposits in the area.

3. Such an experimental mill would be beneficial to the national economy through experimental work in developing of power and important chemicals and other byproducts of a uranium mill.

4. Providing such an exception to the October rule permitting an experimental plant, would keep faith with International Resources Corp. which submitted their proposal several months prior to the October freeze, it would give a limited market for an area having no present milling facilities, which would keep faith with hundreds of small-claim holders, as well as larger operators who have invested more than $2 million of their own local funds in the area.

Representative VAN ZANDT. Is your Governor coming this afternoon?

Representative BERRY. He is down at the Pentagon right now. He did not expect to get up here until 3:30. I hope he will be here.

First of all, Mr. Chairman, in response to the question that Congressman Hosmer asked of Congressman Thomson, there is one thing that I believe needs to be taken into consideration when we are thinking about this October cutback order, and that is that in the mill at Edgemont, for instance, which is actually very close to the Wyoming line, and which handles a large share of the uranium that comes out of Wyoming, particularly eastern Wyoming, all of the big outfits have a contract with AEC. There are probably 4 or 5 of the large outfits that have a contract for delivery.

The people that are hurt are the small individuals at the Edgemont mill, the small individuals who have no contract. They have a capacity of probably 550 tons at this Edgemont mill.

The October order cut them back to 400 tons.

Now, the big outfits, with a contract, are safe, but the small operators have to divide up 30 tons a day and it does not even pay the interest on their investment, to say nothing of their operating expenses. That is one of the problems that we have in this October cutback.

If the cutback has to be made, I believe that some way it should be worked out with the contract operator as well as the company that has the mill, too.

Now, I direct my remarks primarily to an area that some of you gentlemen know something about. It is an area in the corner of the four States, Montana, Wyoming, North Dakota, and South Dakota, wherein uranium was found in lignite coal.

The first thing that had to be done, lignite coal being a fuel mineral, and a leasing mineral, we had to change the law and Congress did pass an act providing a change and permitting filing under the hard-mineral law in cases where the uranium is found in lignite.

Then they discovered that they had no known process for the removal of the uranium from this carboniferous material.

At Grand Junction they set up a pilot plant. A company known as Catalitic Construction Co., with Arthur E. Pew and Ohio Oil Co. as the principal sponsors, went to the Atomic Energy Commission and obtained a contract.

In that contract they were to work out a process, an economic process, and AEC said that if they could find a process for the removal of U_3O_8 from this carboniferous material, lignite coal, that they would pay until 1962, $10.50 per pound.

The result was that Catalitic went in and spent a lot of money as did Ohio Oil and the Pew associates.

Not only did they spend a lot of money, but also the International Resources Co., which is primarily a local company, working with AEC, at Grand Junction, worked out a process. When the process was complete, Catalitic told AEC that they did not think that they could do the job for less than $11, and because they could not the Atomic Energy Commission stepped out of their contract. They had that right, of course.

International Resources, however, have come in and offered to do the job for $9.64 a pound, which is 86 cents less than AEC would have contracted for with Catalitic.

But they said that, in spite of the fact that International Resources had been working with and spent a lot of money in conjunction with the AEC at Grand Junction in working out this process, that they did not have a firm contract and, therefore, they are not under any obligation to contract with them.

Now, I probably should say that after the law was passed authorizing the filing of claims, more than $2 million has been spent in this four-State area, and it is not a large area, uncoving these lignite beds and getting them ready for operation when a process had been developed.

The process now has been found and this International Resources has offered to put in the mill at $9.64 per pound.

The claim holders have spent a lot of money in getting their ore uncovered and so forth.

And there is no mill in the United States today which can process uranium from lignite.

I think that if they did not have a firm contract, and they did not have principally because they did not ask for it, they at least had a quasi-contract with the Atomic Energy Commission, a contract that is at least morally binding upon AEC.

Secondly, we have no proven process in the lignite field, and I think that it is very necessary that AEC go ahead with their plans for a mill in this area, fulfilling their obligation not only to International Resources, but all of those hundreds of small operators in that area who have put a lot of money into it.

Thirdly, if the mill is to be built, I think it should be done at once. The contract should be let prior to July 1 because under the law these claim holders have got to do their assessment work prior to July 1. Today they have nothing and there is no incentive for them to go in and put another hundred dollars in their claims.

Fourth, I think it wold be well for national defense and for the future welfare of uranimum in this country if we had a plant established there as an experimental plant to determine the cost of removal of uranium from lignite, to develop the process in the event

that if it ever is necessary to have this uranium that is now sealed up in these uranium beds.

I would ask, Mr. Chairman, permission to file with the committee a copy of the proposal of International Resources Corp. with the Atomic Energy Commission, which gives a very good history of their activity, both in the development of the process and in their offer to the Atomic Energy Commission.

Chairman DURHAM. Without objection it may be filed with the committee.

(The material referred to follows:)

THE CASE FOR A URANIUM PROCESSING PLANT IN THE FOUR STATES AREA OF NORTH DAKOTA, SOUTH DAKOTA, MONTANA, AND WYOMING FOR LIGNITE ORES

With particular reference to the proposal of International Resources Corp. (a South Dakota corporation). Submitted August 15, 1956, amended July 2, 1957 2, 1957

GENERAL STATEMENT

International Resources Corp., a South Dakota corporation, first notified the Atomic Energy Commission, by letter, of its wish to evaluate the possibilities of building a processing plant for the treatment of uranium-bearing lignite ores in the four-States area of North Dakota, South Dakota, Montana and Wyoming on June 1, 1955. Since that time it has spent several hundred thousand dollars in the exploration for and proving of suitable ore reserves, and in its own independent experimentations and research relative to the most feasible method of treatment for uraniferous lignite ores.

Interest in the uranium possibilities of this area first became acute in 1954. The fever ran high for many months—in fact for several years—and representatives of the Commission encouraged exploration and development work.

An AEC statement read to a House Interior Subcommittee stated that present information indicates "that these deposits offer promise of becoming an important source of uranium." The statement also indicated that the AEC was conducting studies in search of a satisfactory process for recovering uranium from lignite, and said that the Commission was prepared to establish pilot plant facilities at Grand Junction.

At that time the subcommittee was studying a bill introduced by Congressman Berry of South Dakota to clarify existing law so that uranium mining could be facilitated in the lignite beds of the public domain in South Dakota. The AEC statement said it felt Berry's bill would "provide a satisfactory means for the exploration and development by private parties of this important potential source of uranium."

Among other individuals who spent thousands of dollars in this exploration and development work was Mr. Harold R. Eyrich of Custer, S. Dak. He encouraged residents of the area to stake hundreds of claims in the Custer National Forest, in the North Cave Hills and South Cave Hills, within Harding County, S. Dak. In perfecting these claims, with postings, stakings, filings, discovery work and the like, he personally spent $80,000.

Leases were taken on the claims in which Mr. Eyrich had an interest, from the resident owners and locators. It was at this point that International Resources Corp. was organized, and the Eyrich leases were assigned to said corporation. Actually, this corporation was organized primarily for the purpose of mining and milling the uraniferous lignite ores of this area. Its capital was furnished by the organizers of the company, and none of its stock has been sold at public offering. Its incorporators include some of the Buckinghams of Buckingham Transportation, Inc., and Buckingham Wood Products, Inc., of Rapid City, S. Dak.; several bankers in South Dakota; oilmen from Wyoming; brokers from Denver; and the Governor of Colorado.

Realizing that this ore had no value unless a market for it were established, the officers of International Resources Corp. set out early in 1955 to obtain a contract from the Commission. It being our understanding that the proper channels for this were through the operations office at Grand Junction, we visited with the manager and his assistants in Grand Junction on numerous occasions and followed their suggestions and advice as to the procedure to be followed.

First, we wrote the letter of June 1, 1955, expressing our interest in evaluating the possibilities of building a mill. Then, we put a crew in the field and spent a year and a half exploring for and proving reserves in the Cave Hills area of Harding County, S. Dak. At the same time our company, under an exclusive contract with the Colorado School of Mines Research Foundation, conducted extensive laboratory work in connection with the testing of processing methods for this type of ore. Applications for patent are pending on some of the discoveries, and improvements were worked out on some of the known methods.

Instead of asking the Commission for a letter of intention or commitment, as was done in the case of Ohio Oil Co. and Standard Pipe Line Co., we felt that we were prepared to submit a formal proposal, and such a proposal was filed with the Grand Junction office on August 15, 1956.

In discussing this proposal, at Grand Junction, we were advised by the Manager of the Operations Officer that pilot plant tests seem advisable—both for the benefit of the Commission and for our benefit as well. It was suggested, therefore, that our proposal be held in abeyance until such tests could be made. Steps were immediately taken by Grand Junction for the purchase of ore from our company and from other companies, for pilot plant tests, and such tests were in fact run. These tests were conducted by National Lead Co., Inc., under AEC supervision. They were quite successful, and the reports were made available to use and to other interested parties.

Following the pilot plant tests and an interim report by National Lead Co., Inc., Senator Case from South Dakota interviewed Mr. Jesse Johnson, Director of the Raw Materials Division, and quoted him as saying the "Commission will be glad to receive proposals from International Resources Corp., or any other potential processor for establishment of a mill with a buying program, and their representatives may obtain data for computing cost estimates from the Grand Junction office."

Data was obtained at Grand Junction, and the amended proposal of International Resources Corp. was filed July 2, 1957.

Up to that time the Atomic Energy Commission had indicated that a contract would be allowed for uranium bearing lignite ores, if a price of $10.50 per pound could be met for uranium concentrates. By obtaining the consent of other property owners who had committed ore to our mill, we were able to advise the Grand Junction office by letter and Mr. Johnson by wire that owners had agreed to ship ore to the mill without compensation for the cost of transporting moisture content in excess of 5 percent, and that would enable us to bring the overall cost down to at least $10.50 per pound of U_3O_8.

From the time our amended proposal was filed on July 1957, we continued to urge the Grand Junction office to negotiate or discuss the cost figures with us at the earliest possible date, but it was November 18, 1957, before such a meeting could be arranged.

In the meantime, we now realize, a change of policy was apparently adopted by the Commission. We appreciate and understand the circumstances which made this change of policy necessary, and we realize that it could not be helped. We do feel, however, that the merits of the case for uraniferous lignites are such that it deserves top priority in the granting of any further domestic contracts.

PRIORITY CLAIMED

When Mr. Johnson, director of raw materials for the Atomic Energy Commission, announced that the United States had arrived at the point where it no longer was in the interest of the Government to expand production of uranium concentrates, and that the Commission was faced with limiting commitments for additional domestic uranium production, he stated that "Proposals for domestic contracts which already have been submitted still will be considered." With respect to new proposals between now and 1962 for additional mill construction or expansion, he also said, "preference will be given to providing a limited market for areas having no present milling facilities."

Of course, our proposal qualifies on both scores. It had been submitted several months prior, and it is for an area having no present milling facilities. Not only is there an absence of milling facilities in the area, but there is in fact no mill at all for lignite or carbonaceous ores.

The AEC we know has had far more than a passing interest in this potential source of uranium. Aside from the extensive fieldwork done by it, laboratory testing was carried on for many months by the National Lead Company, Inc.,

under a contract with the AEC. Later on ore was purchased for pilot plant testing, and months were spent on such tests. No doubt the Commission has done more to prove the feasibility of obtaining uranium from carbonaceous materials such as are present in this area than all of the individuals and companies involved. It would surely be a shame to lose the benefit of all of the AEC expenditures in this field and of all the fine results which were accomplished.

The Four States Uranium Association, through its president Donn Bennett, of Buffalo, S. Dak., has made a survey of expenditures which have been made by various companies and hundreds of individuals in the development of uranium potentials in this area. We understand he has or will be furnishing these figures to the Commission. In a general way, we understand the total figure runs to more than $2 million.

The largest expenditures were made by the Ohio Oil Co., in association with Arthur E. Pew, Jr., of Philadelphia. Apparently their expenditures have exceeded $850,000. They have expressed interest in seeing our company build a mill, as they will probably not be able to recoup any of their expenditures otherwise. Representatives of Ohio Oil Co. have offered to assist our proposal in every way possible.

The expenditures of our own group in International Resources Corp. has run around $350,000. Then there are several companies like Peter Kiewit Sons' Co., Farmington Funding Corp., Northgate Mining Co., Rosebud Oil Co., Uranco Mining & Exploration Co., Homestake Mining Co., and Manidon Mining Co. which have spent thousands of dollars, in many cases running close to or over $100,000 each.

Except for the work of Ohio Oil Co., the expenditures of the many individual locators and property owners will total more than the expenditures of the companies. Members of the Commission who heard our oral presentation in Washington will recall the statement of Mr. William S. Haivala, who explained where and how he had personally spent over $53,000. In the Belfield area, a group composed of Tom Landis and Ray Gress of Dickenson, N. Dak., Paul McCann of Bismarck and Roy Getting of Sanborn, Iowa, point out that they have spent in excess of $110,000.

Most of the work done in this area has been done by local residents, and most of the money spent has been local money. With 2 or 3 exceptions, the companies are not large companies. They have been composed of and financed by local people. These people feel that the Commission by its activities and interest in uraniferous lignites has at least impliedly, if not expressly, invited their expenditures and the development of uranium possibilities in the area. If it be true, as expressed by Senator Mundt, that the citizens of the Four States area have missed the bus for the time being, then they want to be first in line for the next bus.

COMPARISONS NOT FAIR

There seems to be somewhat of a tendency to compare the cost of processing lignite ores with the cost of processing carnotite ores, and to compare the proved tonnage of lignite uranium ores with the proved tonnage of carnotite ores in certain areas. Our people feel, however, that these comparisons are not fair.

It must be remembered that the earlier costs for processing carnotite ores were about twice as much as they are now. After the experiences of more than a dozen carnotite mills, and with a lot of help and encouragement from the Government, it is inevitable that processing costs in those mills should be brought down. By the same token, there is every reason to believe processing costs will be brought down just as much or more for lignite ores, when there has been an opportunity for actual milling experience in that field.

With respect to the "proved" reserves of different areas also, it must be remembered that no substantial reserves have been proved in any carnotite area before the establishment of an AEC buying station or the awarding of a mill contract. We point for example to Edgemont and to the Gas Hills in Wyoming, where there were practically no known reserves when the buying station was established. Even when the first mill contract was awarded in each area, the reserves were still in doubt. In the Gas Hills, it is understandable that reserves are now developed, after the benefit of a buying station for months and then the announcement of three different mills.

Of course, it has been the history of all of the uranium areas so far that after there has been a market for the ore, ample reserves were developed. In the case of lignites, however, there has never yet been a market of any kind. The fact that reserves have been developed at all, without a market, is quite remarkable.

Property owners in both North Dakota and South Dakota claim enormous ore bodies, amounting to many million of tons. Most of these ore bodies cannot be called "proved" reserves at this time, but a lot of them will become such when a market is assured.

THE PROPOSAL IS COMPETITIVE

It is not intended, in what has been said, to leave the impression that the proposal for a uraniferous lignite mill requires special considerations. The project at this time is quite feasible, and the proposal is for a contract comparable in terms to those being allowed for carnotite mills.

The Operations Office at Grand Junction has already negotiated with representatives of International Resources Corp. on a possible price figure and other contract terms. As a result of these negotiations, it has been agreed that concentrates can be furnished for $9.64 per pound of U_3O_8 until March of 1962, after which the price would be $8 per pound, or the same as it is for any other mill. This means that no appreciable special considerations would be extended to make a lignite mill possible.

As the proponent for this mill, our company feels confident that the figures are right and that the proposal is definitely feasible. In the first place, we have every confidence in our metallurgist, Mr. H. L. Hazen. He has done the figuring for operating costs, has helped to design the mills and checked the construction costs on the uranium mills at Edgemont, Gunnison, Ship Rock, Lake View, and for Fremont Minerals at Riverton. His work in each case has been good, and we consider him tops in his field.

We also have found that the AEC estimators in Grand Junction are extremely capable men. With the benefit of exact figures on the construction costs and operating costs for every uranium mill thus far built in the United States, it is understandable that these men know more about such costs than anyone else. Therefore, with them and the best engineers of the Stearns-Roger Manufacturing Co. in agreement on construction costs, and with them and Mr. Hazen in agreement on operating costs, we are quite confident that a fair and feasible price has been arrived at.

FINANCING

The financing for the proposed mill has been assured to us by Bosworth, Sullivan & Co. of Denver, who handled financing for the Western Nuclear mill in Wyoming. That firm has expressed a willingness to furnish the Commission with such letters of assurance as may be required when a contract is authorized. In the meantime funds are tentatively arranged for and committed as much as possible at this point. Final commitments are, of course, subject to the final terms of a contract and the ultimate date of a contract. With 1962 drawing closer every day, and the discontinuance of amortization allowances at that time, it can be seen that each month of delay in starting the project makes it that much less feasible.

THE LIGNITES AND DEFENSE

The four States area of North Dakota, South Dakota, Montana, and Wyoming has one of the greatest potential sources of power and energy there is anywhere. It is generally said that this area has the largest known deposits of lignite in the entire world—quite a broad statement. However, suffice it so say, for our purpose, that certainly is an area with some of the most extensive lignite beds in the United States. The beds, too, are generally close to the surface with a light and comparatively soft overburden. The possibilities of power and chemicals from these beds are tremendous, but they have not been developed. Something like the uranium mill now being proposed is necessary to open up these possibilities. Therefore, if uranium on its own proved to be merely a break-even proposition, it is possible that the byproducts in time would become principal products. It is not at all beyond the realm of possibility that such an enterprise could become a case of the tail wagging the dog.

Our company, with limited capital, limited time and no assurance of a contract, has not been able to prove these possibilities to a certainty, but the presence of one or more byproduct contingencies has always been a plus consideration favoring this venture. The proposal, in that sense, offers something that is not offered in any carnotite mill proposal.

The Stearns-Roger engineers who have estimated the construction costs for this mill estimate that the plant could produce 32,000 continuous kilowatts of electrical power from waste-heat boilers. That is heat which will come from

a roasting of the lignite, and which will be wasted away if not utilized for power. The Black Hills Power Co. will have a need for that amount of additional electrical power in the Rapid City area by the end of 1959, and it has expressed a desire to utilize heat energy from our plant, if it can be made a long-term operation.

Also, the lignite ores which contain uranium seem generally to contain about 4 pounds of molybdenum per ton of ore. Apparently it will not be difficult to dissolve the molybdenum from the ore, as it will go into solution incidental to the process of dissolving uranium.

The Government in recent years has spent large sums of money experimenting with the feasibility of making motor fuels from coal products. These experiments, we understand, have been quite successful, but the economics, as far as motor fuel is concerned, are still with the petroleum industry. However, the significant phase of the development of coal products seems to lie in the field of chemistry, and when it comes to a processing of such products, the chemicals appear to be an important byproduct.

We have noticed that several of the oil companies, such as Continental Oil Co. and Phillips Petroleum Co., now have petrochemical subsidiary companies. There seems to be a growing, and in fact a major, emphasis upon this field of development in these companies. Although no efforts have been made as yet, in pilot-plant testing, to save the volatiles, oils, and tars in the processing of lignite ores for extraction of uranium, it would seem that no problem would be involved in doing so, if and when a market is established for such substances or for the chemicals contained in them.

Dr. Alex Burr, director of the North Dakota Research Foundation, has done considerable experimenting with the practicability of making a fertilizer from what would be tails in a plant of this kind. Not being a chemist, I can scarcely explain his idea, but it seems that he would use a phosphoric acid instead of sulfuric acid on the ore to be used in making fertilizer. Then, apparently he would ammoniate the tails and use them for the fertilizer. We cannot say whether there is or is not any merit in Dr. Burr's suggestion, but it may be worthy of investigation.

Some of the ore which would be used as feed for this mill has been found to contain germanium. The content is probably not sufficient to justify an operation for the germanium alone, but it has a possibility of becoming a byproduct in certain parts of the area.

In recent months Mud Control Laboratories, Inc., has started using certain lignites from the four States area as an additive to its oil well drilling mud. Like fertilizer, it would seem that a market for such a use would be quite limited. However, if it could come from the tails out of the plant, there would be an added advantage.

EXPERIMENTAL PLANT

The case for a uranium mill for lignite ores, we feel, is a strong one on its own merits alone, in comparison with other mills. The fact that there is no mill in the four States area; that there is no mill at all for lignite ores; and that the negotiated price and terms for a contract to cover such a mill are competitive should, we suggest, qualify this proposal for priority in the awarding of any additional milling contracts.

Aside from these considerations, however, it seems reasonable to us that the Commission might consider the awarding of a contract in this case for experimental purposes. In no other way, as we see it, can this important potential source of uranium ever be developed. In no better way can the milling processes for uranium ores, other than carnotite, be improved and perfected for possible future use. Moreover, the possibility of unlocking or encouraging the utilization of lignite as a source of power and important chemicals, or other byproducts, would further justify an experimental uranium plant in this area.

It has been suggested by some of the Senators and Congressmen who met recently with Commissioner Libby, Commissioner Floberg, and Mr. Johnson, when a group of property owners and other interested parties from this area were in Washington, that the Commission, if it sees fit to do so, could allow a contract for this mill, on an experimental basis, without prejudice to the revised policy adopted last October. In fact the Commission, we submit, would be justified in considering it an exception to the decision made at that time.

But whether the proposal is or is not considered an exception to the rule, and regardless of whether it is allowed as an experimental plant or otherwise, we urge its consideration and approval at the earliest possible date as (1) a proposal

which had been submitted several months prior to the decision in October and (2) a proposal entitled to preference as one providing a limited market for an area having no present milling facility.

Respectfully submitted.

JOHN J. MCINTYRE,
Secretary, International Resources Corp.

Chairman DURHAM. Proceed, please.

Representative BERRY. Mr. Chairman, Senator Case, Congressman Krueger, Senator Mundt, and Senator Young, are now here.

All of our witnesses are now here, if you wish to call on them.

Governor Foss is also here.

Chairman DURHAM. Senator Case, will you come around, please, sir.

Welcome, Senator Case, to the House side.

STATEMENT OF HON. FRANCIS CASE, UNITED STATES SENATOR FROM THE STATE OF SOUTH DAKOTA

Senator CASE. Mr. Chairman, and members of the committee, it is a pleasure for me to come over, and I count it a privilege to appear before you.

I regret that the shift in time prevented me from hearing the opening part of Congressman Berry's statement. I hope I do not overlap on what he may have said. If I should, I trust the chairman will so indicate and I will try to confine my remarks to supplementing what he has already said.

First of all, may I say that our interest in getting a development mill in this area is based upon the belief that it is in the interest of the United States to have a mill in being, in place, which will demonstrate and actually produce uranium from these lignite ores. It is a different type of ore than is found anywhere else in the United States, so far as I know. It is a very high grade ore. Until we have a plant in being in the field, it will be difficult for the value of that field ever to be fully realized or appreciated by the United States.

Moreover, should our foreign sources of supply be cut off at any time, and we want the field to get on to a large production scale, it would be altogether important to have had a mill in place in the field doing things under actual production conditions. The second point I should like to make is that the claimholders have proceeded in good faith. The Department of the Interior, through its Minerals Division through its Coal Division, and the Atomic Energy Commission, cooperated with the Representatives and Senators from the area in securing legislation to validate the claims that were filed in this area.

Originally, this lignite area was a part of a great general coal reserve, although the lignite had a very low B. t. u. value, but it was part of a reserve that had been withdrawn from entry. The discovery of the uranium in the lignite ores introduced a new factor. The Congress, on the direct recommendation of the Department of the Interior, and representatives of the Atomic Energy Commission, took the action necessary to release this area from the coal reserve so that the claims could be located and validated as mineral load claims.

Following that, companies and groups became interested in the possibility of a process to handle the ore. Representatives of the Atomic Energy Commission visited the area in person, and talked with some of the claim holders, talked to the Representatives of Congress from that area.

Then the Atomic Energy Commission instituted, very properly, a research processing study at their plant at Grand Junction, Colo. Claim holders in the area were encouraged to submit samples of ore there. Groups of persons interested in the possibility of organizing companies to make proposals for a mill were permitted or, you might say, invited to come and get the benefit of the research that the Atomic Energy Commission was doing at Grand Junction.

I am sure there was good faith on both sides. The Atomic Energy Commission felt it was desirable to find out the possibilities of this ore, and the people, on the other hand, both the claim holders and associated groups, felt that it was proper for them to look toward the establishment of a buying station and a processing mill.

Chairman DURHAM. What year was this discovered out there?

Senator CASE. The discovery in the lignites, I think, was made in 1954. Last year, the matter of getting a mill to process the ores took more form as the preliminary reports from the Atomic Energy Commission plant at Grand Junction indicated that a feasible process was in the making. On the 2d of May 1957, Mr. Jesse Johnson, the Director of the Raw Materials Division, wrote me, in part, as follows:

> As indicated in earlier correspondence, if it is determined that uranium can be economically recovered from lignite, we assume that a private company will be ready to construct a mill and sell uranium concentrate to the Commission on acceptable terms. We would be interested in receiving proposals for the sale from any company interested in processing lignites. Two companies presently are studying the matter, and each has indicated that it may submit a proposal.
>
> A commission contract with a milling company would require the company to purchase lignite from independent producers.

I think that last sentence had reference either to something I had indicated in my prior letter or in personal conversation with Mr. Johnson when I put the question to him if a contract is given to one of these companies, what about the individual or small-claim holders, will they be able to sell their product. He assured me that they would. On the 8th of July 1957, I had a telephone conversation with Mr. Johnson, on which I wrote a memorandum, which is in my files, as to the matters discussed.

From my notes at that time I recall this:

> Two proposals for mills in the uraniferous-lignite coal area of the Dakotas have been submitted to AEC. The first one was submitted by the Ohio Oil Co., and the second one is by the International Resources Co. Its proposal was submitted through the AEC office at Grand Junction, Colo., where the Commission has been running these lignite ores through pilot-plant processes.

My conversation with Mr. Johnson on the 9th of July followed a conversation I had had with representatives of the International Resources people, one of whom happens to live in my hometown, although he is some miles from this area, and with Mr. McIntyre, of Casper, Wyo.

They had indicated to me that they were working through the office, the AEC office, at Grant Junction, Colo. The Ohio Oil Co., its headquarters being near Washington, I think made most of its negotiations with the AEC here in Washington.

Personally, I attribute the fact that the International Resources Co. did not ask for a commitment in writing to the fact that they were working, as they had been instructed to work or keep in touch with, with the office at Grand Junction, Colo.

Their proposal and the terms that they might suggest, was geared more to the development of the process at Grand Junction.

Chairman DURHAM. This cutoff order and present policy may mean, of course, that there is no operation whatever. They would have no outlet whatsoever to sell the product to.

Senator CASE. That is exactly true.

Chairman DURHAM. Do you know what the total investment has been in that area?

Does anybody have those figures?

Senator CASE. I understand that the Ohio Oil Co. expended something over $1 million. The International Resources has spent many thousands of dollars. The Peter Kewit Co., and others who have blocked up groups of claims, have spent many thousands of dollars.

Chairman DURHAM. I suppose the International group approved of that figure, because they, according to Congressman Barrett, offered it at $9.60 per pound delivery, as against about $11.15 that we buy it for offshore.

Senator CASE. Yes. And their figures, Mr. Chairman, were developed for them on a flowsheet with Mr. Hazen as their consulting engineer. Mr. Hazen is the mining engineer who designed the mill at Edgemont, S. Dak.

I think that the Atomic Energy Commission people will tell you that the Edgemont mill has been one of the most efficient and satisfactory of the mills presently in operation.

It was designed for a 200-ton output, per day. It has been operating and actually handling about 350 to 400 tons per day.

Chairman DURHAM. Do you not think we have to solve the other problem first, and that is some sale outlet for that somewhere, by the Government, or at least do away with some of our restrictions at the present time and have a foreign market?

Senator CASE. I think you are correct, Mr. Chairman. The line of thinking that I was just developing here on the sequence of cooperation between the people in the field and the Atomic Energy Commission is based upon the fact that shortly after I returned to Washington for this session of Congress, I had a conference with Mr. Jesse Johnson over this stop order, this cutoff order, of October 28 or 29, and he advised me that under the directives of the Commission, under which he was operating at that time, he could not make any new commitments, but that commitments made prior to that cutoff date would be honored.

I think, as I recall, he stated that there were 3 commitments which were recognized, 2 of which had been announced and 1 of which had not been announced, but that the Ohio Oil Co. had a commitment in writing, and had they come within the $10.50 figure, per pound, they would have had a contract.

And had the International Resources people had a commitment in writing, they would have had a contract. But they made their proposal without securing in advance a commitment in writing on the proposal. The line of thinking I am developing here is that they in good faith, proceeded by the suggestion of working through the AEC office at Grand Junction and in the discussions that I had, at least with Mr. Johnson, during 1957, prior to the cutoff order, I was not aware that they needed a commitment in writing. Everybody was operating in good faith. I am sure Mr. Johnson did. I am not suggesting that he was not. But he found his hands tied when the

cutoff order was issued. But he did say to me that had they had a commitment in writing as the Ohio Oil Co. did, that International would also have a contract, the same as Fremont and some place in Oregon, I believe it is.

Chairman DURHAM. The oil company had a contract, but because of the price, they did not choose it.

Senator CASE. That is correct. Further, on the 4th of September 1957, there was a press release issued by the Atomic Energy Commission in Washington, from which I quote:

> However, the same pricing formula offered to Ohio Oil Co. was also offered to other prospective producers of uranium from lignite, and the Commission currently is studying a preliminary proposal submitted by International Resources Corp., Custer, S. Dak., involving the construction of a mill to process uraniferous-lignites.

That is the press release in which the AEC announced that the Ohio Oil Co. had decided that they could not come under the $10.50 ceiling. But it went on then to say:

> However, the same pricing formula—

meaning, I suppose, the $10.50 ceiling—

> offered to Ohio Oil Co. was also offered to other prospective producers of uranium from lignite, and the Commission currently is studying a preliminary proposal submitted by International Resources Corp., Custer, S. Dak., involving the construction of a mill to process uraniferous lignites.

Again, our people there were proceeding in good faith, and there was nothing there to suggest that we ought to get a commitment in writing, that they were being given consideration, because the press release of the Atomic Energy Commission itself said that the Commission was studying their proposal. On September 6, 1957, the Federal Power Commission's News Digest carried this statement, and it was credited to an item from the Wall Street Journal dated September 5:

> The Ohio Oil-Pew indicated it might build a uranium mill using lignites from the Dakotas if better processing techniques are developed. The AEC said that in the meantime it is studying a preliminary proposal for a similar venture submitted by International Resources Corp., Custer, S. Dak.

That is the way the Wall Street Journal and the Federal Power Commission News Digest interpreted the report or press release of the AEC. On the 27th of September 1957, I had a letter from the Atomic Energy Commission replying to a letter I submitted to them in which I had transmitted an editorial from the Buffalo, S. Dak., Times Herald, on the Ohio Oil-Pew decision to defer mill construction, and this letter from the AEC said:

> Our Grand Junction Operations Office is expecting further discussions with representatives of International Resources sometime within the next month.

So, Mr. Chairman, I submit to you that we feel that the Atomic Energy Commission should make it possible for its Director of Raw Materials, or whoever is the responsible contracting officer, to offer a contract to the International Resources because, in good faith, they seem to have followed the lines indicated for the submission of a proposal.

Had they been dealing directly with Washington, probably, rather than with Grand Junction, they would have had it in writing. But these public statements and the correspondence would indicate that

there certainly was an intent on the part of the representatives of the Atomic Energy Commission to deal with the International Resources Co.

Chairman DURHAM. Thank you very much, Senator.

Senator CASE. Thank you very much.

Chairman DURHAM. Congressman Krueger, do you want to come forward now and make a statement?

STATEMENT OF HON. OTTO KRUEGER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH DAKOTA

Representative KRUEGER. Mr. Chairman, and members of the committee, the story is the same. We are all interested in uranium in the Dakotas.

Chairman DURHAM. I did not know as many States were involved in this until these hearings started.

Representative KRUEGER. Without duplicating the testimony of other witnesses, I would like to summarize the reasons which make essential the early approval of processing facilities to extract uranium from lignite deposits in the Dakotas.

The extensive work already carried out by individuals in this region has established the fact that there is uranium here in great quantity. It would seem that in this period of increasing demand for uranium, every effort should be made to learn the full potential of this region and that will only be possible when processing facilities are available.

The price which has been advanced by International Resources Corp. places lignite uranium in a competitive position. It is below the initial goal set by the Atomic Energy Commission and reflects the work which has been done already to lower the cost.

In short, there is uranium; individuals have gone to great expense to discover and develop the findings; private industry has gone to considerable expense to develop, in cooperation with the Atomic Energy Commission, a feasible, low-cost process. If we need uranium, then I firmly believe the very highest priority should go toward giving early approval to the proposed contract for development of lignite sources of uranium.

I only summarized this, because our story, from the four-State area, is about the same, and I do not want to duplicate the testimony already given, or which probably still will be given.

That is the end of my statement.

Chairman DURHAM. Thank you very much, Congressman.

Senator Mundt?

STATEMENT OF HON. KARL E. MUNDT, UNITED STATES SENATOR FROM THE STATE OF SOUTH DAKOTA

Senator MUNDT. Mr. Chairman and members of the committee, it is good to be back over on the House side again. I regret that I am suffering from a pretty severe cold and it may be a little hard to understand me. I will try to speak loudly enough. I want to follow the commendable example established by my friend Otto, and not retrace a lot of the testimony which you have already heard. Suffice it to say that I associate myself completely and emphatically with the presenta-

tions made by the three preceding witnesses dealing with this particular uranium deposit, and seek to emphasize the fact that while the International Resources Corp. did not have in writing what the three companies who were permitted to qualify after the reduction order went into effect had, they did have, to all intents and purposes, the same type of understanding. They had gone through the same preliminary procedures. They had had the long series of negotiations.

They had invested some $2 million in efforts and in plants, so except for the fact that they were not cognizant of the fact that they should have secured in advance, in writing, a statement, they had placed themselves precisely on the same basis as the three other groups that the Atomic Energy Commission, and I think wisely so, decided to exempt from the reduction order. We feel that as a consequence of that fact alone, the International Resources Corp. should be given some consideration now that they have gone to this vast expense and have submitted a competitive bid. I think there perhaps are two other factors which would tend to influence people interested in developing better uranium supplies for this country at cheaper prices. To grant this contract to International Resources Corp., because they are dealing with uranium deposits in lignite, because they are dealing with uranium deposits, therefore, which will be handled by a different procedure, then it seems that some advantage should flow from the experimental work which would come from a corporation actually producing uranium from that kind of a reservoir.

It might open up great amounts of potential uranium production for an unpredictable future, when instead of having too much uranium once again we might find ourselves with too little uranium. Not only is that true from the standpoint of volume, but I think, Mr. Chairman, it is also true from the standpoint of price.

The more different types of competitive procedures and processes that we can employ to satisfy our uranium needs, the more likely we are in the laboratory of actual experience to develop techniques and processes which will produce this uranium at increasingly lower prices.

Chairman DURHAM. We would have been very glad to have had that in 1942, would we not?

Senator MUNDT. Most certainly. We do not know when this present rather happy situation will terminate, when we seem to have rather adequate uranium supplies for the moment. But we have to look ahead. We know that in this atomic age it is conceivable that what now seems to be an adequate supply will be a short supply. When that comes, it surely should be in the public interest to have an established commercial procedure for extracting uranium from lignite, and it should be to the public advantage to have the accountancy tables to demonstrate its cost, which, while they may seem to be high at the moment, through the inventing of some procedure might actually be relatively less at such a time.

I have here, Mr. Chairman, a statement prepared by Mr. Donald Bennett, the president of the Four States Uranium Association. Mr. Bennett lives in Buffalo, S. Dak. He has prepared this statement especially for this Joint Committee on Atomic Energy.

I would ask leave to file it as part of my statement.

Chairman DURHAM. Without objection that may be done.

(The document referred to follows:)

THE CASE FOR A URANIUM-PROCESSING PLANT IN THE FOUR-STATE AREA OF NORTH DAKOTA, SOUTH DAKOTA, MONTANA, AND WYOMING FOR LIGNITE ORES

With particular reference to the proposal of International Resources Corp. (A South Dakota Corporation) by Donald Bennett, president, Four States Uranium Association

GENERAL STATEMENT

Four State Uranium Association is an association of persons interested in the development of uranium-bearing lignite ore in North Dakota, South Dakota, Montana, and Wyoming. The area covered is similar to the Williston Basin area for oil development.

The association was formed in Dickinson, N. Dak., in January 1955. After small associations were being formed in the individual areas where the lignites were being found, it was felt there should be one group representing the entire area.

Since very few mines have had the opportunity to be commercially productive there has been no attempt to raise large funds of money and members of the association, the directors and officers have expended considerable sums out of their own pockets in hopes of making the four-State area one of the most productive uranium fields in the country.

HISTORY OF THE AREA

In as much as I have been connected in some compacity or another with the promotion of the "uraniferous lignites", since the beginning, a great deal of this history may be personal, but it is intended to set out the history as it affects the entire area.

The first claim staked under the general mining law for uranium in the northwestern part of South Dakota, was filed by J. F. Quinn, a retired cattle buyer, and his son, Robert, of Piedmont, S. Dak., in the Cedar Pass area of the Slim Buttes in Harding County, S. Dak. These claims were filed in the first part of May 1954, or nearly 4 years ago. They were not lignite in character, but were more in the nature of carnotite, similar to those in the Edgemont, S. Dak., area. The veins were somewhat thin and the only shipment made did not qualify commercially under the standards set up by Circular 5 of the Atomic Energy Commission.

Considerable work had been done by the United States Geological Survey in the lignites in Custer National Forest, which includes areas commonly referred to as the Slim Buttes, Cave Hills, Short Pines, and Long Pines, located in Harding County, S. Dak., and Carter County, Mont. The reports issued by the men of the Survey stated there were vast quantities of uranium-bearing lignite, but that the content was very low and would fall below the minimum standards set up for purchase by the Atomic Energy Commission. Be that as it may, in July of 1954, Ivan Ellis, Clarence Feigen, and others, operating under the partnership name of Cave Hills Mining Co., staked out claims on lignites in the North Cave Hills area. These lignites were very close to the surface, and in some cases actually exposed on the surface. At this time the firm of Jenkins & Hand, consulting geologists, of Casper, Wyo., were obtaining air anomalies on the lignite area, but trusting in the United States Geological Survey reports, hereinbefore referred to, they continued their search in the sandstone. Those persons of less knowledge of geology, but with a heartbeat that quickened at the sign of the needle rising on the Gieger counter, immediately started going in and staking the lignites and in short time the areas of the Cave Hills and Slim Buttes were enveloped by mining claims. These claims, moving like a flow of lava, soon reached out into the Short Pines areas, Long Pines areas, and on to many points where the Government still held the mineral rights outside of the forest reserve. In Harding County there is an excess of 70,000 acres of public domain, primarily the area consists of the Custer National Forest. I would assume that over 95 percent of this area has been staked for mining claims. In addition thereto, there have been many fee leases, and land located for mining purposes under the State laws, where the State of South Dakota held title to the minerals. Because of our system of endices and our accepted fact that prospectors are not very good surveyors, it would be impossible at this time to accurately plat the complete area covered.

Since, at that time, the Government was actively encouraging the people to prospect for uranium with new stories of bonuses, such as the possible $10,000 bonus, and the "uraniumaire" stories of rags to riches, i. e., Vernon Pick, Happy Jack, etc., the supposedly daily exchanges made in the LaCourt Hotel in Grand Junction, and the natural fever that mining has always produced, people were soon probing into all of the hills in the area and the people of North Dakota were bringing their samples down to compare with those in South Dakota. Since North Dakota has very little land in the public domain in the Williston Basin area, private-fee leases and Government leases for minerals that had been obtained under the land utilization program were being negotiated and an area in acreage far surpassing that of Harding County, S. Dak., was becoming part of the new field.

By October of 1954 shipments were being made to the purchasing agent at Edgemont, S. Dak. These shipments proved to be of a very good quality ore and compared considerably above the average shipments of the Colorado Plateau area. I was personally interested in one shipment made that was assayed at 0.83 of 1 percent U_3O_8. I personally made a call to the agent of the American Smelting & Refining Co. in charge of the purchasing program in Edgemont, S. Dak., in regard to their ability to purchase such ore and was informed that they would purchase any and all lignite-type ores and the miner would be paid for them on the basis of the Circular 5 prices. Trusting in this oral commitment, my partner and I, together with others immediately prepared to go into a mining program that would produce sufficient money to enter a larger exploration program. The enthusiasm was high, the Atomic Energy Commission opened a field office in Buffalo, S. Dak., and started their own drilling program. Drills were being moved in and negotiations were made for claims and such corporations as Ohio Oil Co., Peter Kiewit Sons' Construction Co., Homestake Mining Co., General Minerals, of Dallas, Tex., and others began entering the area. But as quickly as the small miner obtained rental on bulldozer equipment, the purchasing agent in Edgemont informed us that purchasing of such ores was temporarily suspended. My talks with Grand Junction brought me the information that legal status of the claims would have to be cleared.

The coal was reserved to the United States under various acts of Congress prior to World War I and was now subject to the general leasing acts for soft minerals of 1920, as amended, and while the uranium had been released under the multipurpose mining act of 1954, commonly referred to as Public Law 585, the impossibility of removing uranium without destroying the leasing act coal, created some doubt in the minds of their legal staffs and those for the Bureau of Land Management as to the individual's right to so take the uranium under the general mining law. With the formation of the Four States Uranium Association as a group representing the entire area, I became actively interested in the passage of such an act, and, with the help of the congressional delegation from the four States involved. and in particular Senator Francis Case and Representative E. Y. Berry, a bill was introduced in the Senate and in the House. It was my privilege to work with Mr. Clarence R. Bradshaw, now Assistant Solicitor for Branch of Minerals, Division of Public Lands, Department of Interior; Mr. George Abbott, of the staff for the Subcommittee on Mines and Mining of the Interior of the Insular Affairs Committee of the House of Representatives, and to testify in behalf of the passing of a bill placing the lignite-containing uranium under the general mining law, and, on August 11, 1955, Public Law 357 was enacted. This was to have been the solution. This was to have been the answer to our problem. Extraction of the ores was to be purely elementary.

Through the winter of 1954–55 and through the summer of 1955, larger organizations expended large sums, as shall be later shown, in blocking their areas. Many companies began making plans for construction of a processing plant. Each town was bitterly fighting for a location of such plant or plants as there might be. But by this time we were informed that the Government was under no obligation to purchase such ore since Circular 5 applied only to carnotite and roscolite type ores. Since there was no means of economical extraction, we would have to wait until one could be developed. The small miner was in despair. Assessment work was due.

It was true that those that had leased to the larger organizations, and the larger organizations on their own claims, were carrying out a program of exploration and development. But in the summer of 1954 the area had been blessed with a very dry year, and 1955 had been worse, and the prospects for 1956 for the agriculture area were not good. Some of the ranchers and farmers had

been overexuberant and staked too many claims. If they had staked as many as 20 claims, they were going to have to expend $2,000 on such development, development for something that may never develop. So, a day or two before the time of completion of the annual assessment, Public Law 636 was passed extending for 1 year the time in which to do such assessment work on the uranium lignite. As time rolled on, with very little work being done by the small claimants. The larger organizations were losing interest. New fields were opening up. And, with no market, again the small miners of the area appealed to Congress for one more extension of time in which to do their assessment works. Through the able help of persons within the Department of Interior, and Mr. Jesse Johnson, Director of the Division of Raw Materials for the Atomic Energy Commission, the congressional delegations of the areas concerned, once more obtained an extension of time.

It appeared that we were down to two companies that might possibly develop a process that would pay the company to pay the miner. One, commonly referred to as the Ohio Oil Co. organization, being an association of such company and Arthur E. Pew, Jr., of Philadelphia, Pa., seemed to be making an all-out effort to develop their own process. The other, being International Resources Co., under the technical leadership of Mr. H. L. Hazen, was just as determined to come up with a process and a contract for the sale of uranium oxide. The Atomic Energy Commission, itself, was apparently expending a considerable sum of money for the development and study of a process at the Grand Junction Operations Office. There appeared to be a direct commitment by the Commission to the Ohio Oil Co. group to contract for a figure of $10.50 per pound for the concentrate, and it was thusly inferred that this would be considered an economic process if a company could meet this figure.

In the fall of 1957, Ohio's group dropped from the picture. But, before the end of the year, International Resources submitted a bid which was below what the layman considered was the economical figure ($10.50). But, after the fight of the miners through legislative acts, doing work asked of them by the Commission, as their hope, like the head of one drowning, arose from the water for the third time and, apparently, what was to be the helping hand of the Atomic Energy Commission in saving us from our "drowning," it was not a hand at all but a foot firmly placed on the head to resubmerge our program for the third and final time; they would not award contracts for any more plants. But, in the hopes that the Commission has a "respirator" standing by, we are submitting not a brief but a story of what has been done in the area and what we feel is a moral obligation by the Government of the people to its people.

EXPENDITURES MADE IN THE FOUR STATES AREA

In January of 1958, the Four States Uranium Association had a meeting in Bowman, N. Dak., and the peoples were asked to submit statements of expenditures that they had made in the development of their leaseholds or mining claims. The response was not as good as we had hoped for. Perhaps the discouragement has been too great and many people felt there was no use in answering. Even with this poor response, our figure quickly totaled to an amount in excess of $2 million. Now, many of these persons are ranchers and employees in the area who expended very small sums. The total undoubtedly reached such proportions because of the larger organizations. Ohio Oil Co. expended in the neighborhood of $850,000. Northgate Uranium Co., a group headed by Leo Rothe, of Fort Atkinsin, Wis., has expended $400,000. The Farmington Funding Co., of Colorado Springs, Colo., now in receivership with their sole assets existing in this lignite area, expended over $150,000. No figures were available from the General Minerals Corp., of Dallas, Tex., but their figure would be in excess of $50,000; International Resources Co., which has submitted a separate brief, has expended over $300,000; Peter Keiwit Sons' Co., has spent $130,000; Landis-Gress-McCann & Getting Uranium Association, of Dickinson, N. Dak., a local group, expended over $100,000.

William S. Haivala of Wichita, Kans., a native son of the area who returned to his home county for a visit, upon the encouragement of the Atomic Energy Commission that they would buy his ore, spent out of his own pocket $53,000, and in return was able to sell under experimental contract only 300 tons of ore. Many of the individuals such as Ernest W. Caywood of Bison, S. Dak., who owned a drill and was in the business of drilling primarily for water wells, expended $14,000; Uranco Mining & Exploration Co., Inc, of Mandan, N. Dak., a group of small-business men in the area ended up spending $30,000; Allen Burns and Bob Fleming of Bowman, N. Dak., sold their place of business and

spent $65,000. The Bryco Mining Co., an association of farmers, newspapermen, telephone operators, implement dealers, etc., found that they had spent over $34,000 before they finished. Gardner, Walch, and Schumacher, small-business men of a town of about 1,500 people of New England, N. Dak., spent over $19,000 acting in reliance that there would be a program. It is easy to pick out who the big companies are, many of the so-called corporations of which I am very familiar are composed of employees, small farmers and small-business men. It has been my privilege on two occasions to speak to some of the small companies from the town in eastern South Dakota. It is quite pleasing to view the interest the people have taken in the development of their State. People who have put in $100, $500, or $1,000 and have taken their time to go out into the hills and to hire airplanes, hire bulldozers, to take the operators of such equipment into partnerships. These are the things that have built the country. And talking to one of these organizations, there were about 50 men attending a meeting in Mobridge, S. Dak., a town of about 3 or 4 thousand people. They represented a complete cross-section of the economy such as you would find in any small community of the Midwestern Sttaes. Some donated money, some donated equipment, some donated work. I would like to quote from a letter from a farmer in Montana. This letter was addressed to Mike Mansfield, United States Senator, State of Montana.

CARLYLE, MONT., *January 9, 1958.*

MIKE MANSFIELD,
United States Senator, Montana,
Washington, D. C.

YOUR HONOR: Three or 4 years ago we done some prospecting for uranium in lignite coal. We found a great deal which has a very good uranium content and not too hard to get at. The AEC geologists spent a lot of time and helped us a great deal on this project.

For the past 3 or 4 years, we have hung on to these claims and worked them. About June 30 of the last 2 years the work program on the claims have been called off. No one dared wait until that date to delay their yearly assessment work since by law you have to have this completed by July 1 each year. Being our claims are in the Custer National Forest on the Montana side and not too great a distance from the lignite beds in the vicinity of Bulman, N. Dak., where a plant has been proposed, we take this opportunity to call it to your attention.

It seems however, that the AEC does not like to adventure into a buying program in this area on the grounds that they have a lot of ore on hand. When we first started on this project, the AEC done everything possible to encourage us. There were two geologists with us and they insisted that we hang on to the claims in Custer National Forest and not work the minerals we held in the vicinity of Carlyle, Mont., since they could be held for an indefinite period. This we done and we spent a lot of money on our claims, somewhere between three and four thousand dollars. We are not the only ones. There are many others who spent a gerat deal more.

We have an opportunity now to get a plant. Before we get the plant we have to have a market for the concentrate or product of the plant. AEC is our only market. They helped us spend our money by encouraging us to keep digging and staking. Now they are beating around the bush about taking our ore.

We are farmers and by that you know just about the condition of our pocketbooks, specially after a prospecting journey. A plant would work wonders at the present time. It would bring in a few more taxpayers. Put a few more dollars in the pocket of our farmers and businessmen. Even though the plant is across the line in North Dakota, its effects will be felt in a wide area in Montana.

Once we get started in this area with a plant, others are sure to follow. Coal is not limited to uranium alone, as a matter of fact some of our most critical elements can be taken out of our lignites of this area, but it seems we have to start with uranium. The fertilizer industry alone would perhaps be so big in time to come that it is beyond our comprehension at the present time. This is an opportunity to break the crust on the big lignite pond. A big opportunity to take some of the burden of our everlasting, irritating farm programs.

We would like to have you do us a favor, speak to the AEC. Tell them we don't like to lose this money. We cannot hold on to these claims much longer. A word from you could mean prosperity in this immediate area.

Respectfully yours,

CLARENCE E. EVENSON.

Compilation of uranium expense questionnaire

Name	Address	Acreage	Date acquired	Money expended
1. Landis-Gress-McCann & Getting Uranium Association.	Dickinson, N. Dak	13,000	1954–55	$100,000.00
2. Hugh Galland	Lodge Pole, S. Dak	100	1955	1,600.00
3. Trio Mining Co	Bison, S. Dak	100	1954	3,630.00
4. Isaac C. John	Prairie City, S. Dak	660	1954	6,230.00
5. James E. Haggart	Bison, S. Dak	680	1954	2,721.00
6. William S. Haivala	1716 North Sabin, Wichita, Kans.	706	1954	52,914.14
7. Ernest W. Caywood	Bison, S. Dak	660	1954	14,000.00
8. Volcanic Uranium Co	Box 322, Beach, N. Dak	1,300	1954	8,458.00
9. Donald L. Cammack	Buffalo, S. Dak	60	1954	437.00
10. Do	do	280	1954	1,969.00
11. Do	do	370	1954	5,464.00
12. Do	do	200	1955	2,520.00
13. Sherman Oakland	Bowman, N. Dak	1,420	1954	5,750.00
14. Albert Thole	Lodge Pole, S. Dak	420	1957	4,231.00
15. Donald G. Stearns	Bowman, N. Dak	1,200		6,000.00
16. Bert Stenseth	Buffalo, S. Dak	1,800	1954	7,000.00
17. Big Rock Claim Holders Association (F. Lewton, president).	Bowman, N. Dak	660	1954	7,013.00
18. Lee Kolb	Bison, S. Dak	120	1955	3,000.00
19. Floyd A. Norton	Buffalo, S. Dak	55	1954	600.00
20. Lynn A. Sedevie	Bowman, N. Dak	20	1955	150.00
21. Chester L. Crevier	do	210	1954	300.00
22. Harold Jorgenson, Jr	do	425	1954	500.00
23. Arnold Fladmoe	Buffalo, S. Dak	185	1954–55	3,251.00
24. Francis Lyons	do	1,200	1954–55	2,000.00
25. Dean F. Lyons	do	1,100	1954	1,800.00
26. Fred and Chas. Laflin	Sorum, S. Dak	2,100	1954–57	21,000.00
27. Carl McCurdy	Ludlow, S. Dak	120	1954	3,000.00
28. Ted Jensen	Box 626, Bowman, N. Dak	60	1954	1,200.00
29. Adolph Kalina	Bowman, N. Dak	56	1954	300.00
30. Rex B. Foreman	do	60¾	1954	761.42
31. Louis E. Haivala	do	81	1954	1,201.61
32. Cecil Geary	Belfield, N. Dak	800	1940–56	600.00
33. John Geary	do	1,280		500.00
34. Uranco Mining & Exploration Co., Inc.	Post Office Box 54, Mandan, N. Dak.	7,500	1955	30,000.00
35. Donald Hogoboom	308 Huff St., Winona, Minn	50	1955	700.00
36. Wilbur Brewer	Bowman, N. Dak	175	1954	2,300.00
37. Art. J. Rea	do	200	1954	3,000.00
38. Wayne Welch	Ludlow, S. Dak	250	1954–57	1,000.00
39. Oakley O. Lamphere	1220 Blvd., Sturgis, S. Dak	280	1955	2,092.00
40. Allen Burns & Bob Fleming	Bowman, N. Dak	4,000	1954–55	65,000.00
41. Ole Oakland	Rhame, N. Dak	800		650.00
42. Gilbert F. Steig	Bowman, N. Dak	50	1954	550.00
43. Ralph Wearst	Caryle, Mont	1,040	1955–56	5,504.00
44. Bryco Mining Co	Bison, S. Dak	660	1954	36,407.48
45. K. H. & W. Mining Co	Prairie City, S. Dak	40	1954	1,550.00
46. Gardner Walch & Schumacher	New England, N. Dak	7,000	1954	19,300.00
47. Rudolph K. Cornelia	Buffalo, S. Dak	40	1955	200.00
48. Wallis D. Cornelia	do	20	1955	100.00
49. Whitman Uranium, Inc	Robinson, N. Dak	[1] 3,640 [2] 1,012	1955–56	
50. Peter Kiewit Sons' Co	1024 Omaha National Bank Bldg., Omaha, Nebr.	900	1954–55	130,000.00
51. Clarence H. Coffield	Prairie City, S. Dak	680	1955	1,444.00
52. Rosebud Uranium Corp	Gregory, S. Dak			10,000.00
53. Joe Crisafulli & Sons	Glendive, Mont	50,000	1955–56	25,000.00
54. Ohio Oil Co	Findlay, Ohio			850,000.00
55. Northgate Uranium Co	Fort Atkinson, Wis			400,000.00
56. Homestake Mining Co	Lead, S. Dak	560	1954–55	20,000.00
57. Farmington Funding Co	Denver, Colo	500	1955	150,000.00
58. International Resources	Custer, S. Dak			350,000.00
59. Tri-State Uranium	Denver, Colo	[3]	[3]	10,000.00
60. Ben and Joe Kalina, Jr	Bowman, N. Dak	1,700	1954–55	13,620.00
61. Cecil Archer	Minneapolis, Minn		1955	7,200.00
62. Henderson-Bennett Mining Co	Buffalo, S. Dak	350	1954	3,500.00
63. Donn Bennett	do	[4]	[3]	6,500.00
64. Clarence Evenson	Carlyle, Mont			3,000.00
65. J. F. Quinn (deceased) and Robert Quinn.	Piedmont, S. Dak	800	1954	10,000.00
Calls to Dickinson office from small holder reporting a cumulative sum of $3,000.				3,000.00
66. Frank Beidinger & Associates	Watertown, S. Dak			9,000.00
Total				2,440,718.65

[1] Located in North Dakota.
[2] Located in Wyoming.
[3] No further interest.
[4] Interest in No. 62.

It would be difficult to ascertain what percentages of the total expenditures the foregoing figure represents. I believe that I could safely say that from 500 to 1,000 more persons could have answered this questionnaire if we had used more time for soliciting the information and in turn the people would have taken their time to answer. How much this would have increased the figure is purely conjecture. This figure does represent approximately one-third of the number of claims that took advantage of their opportunity to amend and refile their claims under Public Law 357. On May 27, 1957, Mr. William L. Shaeffer, minerals officer, Bureau of Land Management, testified that over 3,000 claims were on file in the office in Billings, Mont. Of course many people did not amend their claims realizing that their uranium was in lignites that would qualify under the definition of coal and they retained their claims under the general mining law without reference to Public Law 357. In Harding County, alone, more than 4,000 claims are of record.

Another figure which probably would compare very favorably with the expenditures of Ohio Oil Co. would be the expenditures by the Atomic Energy Commission. What has been expended by personnel in the field, the plant research in Grand Junction, work by National Lead Co. in Winchester, Mass., together with expenses in offices and resources in such places as Salt Lake, Denver, etc., I am sure that it would be greater than any other company excepting Ohio Oil Co. or possibly Northgate Uranium or International Resources. This is out of my field and I am sure that the figures can be ascertained by the Commission themselves. One difference might be pointed out on this expenditure in that the Atomic Energy has found a vast field of uranium for the Federal Government and that Federal Government as long as it exists, may at some time in the future go to those reserves and get a return on their investment. Not so the peoples that have expended the money as set out in the foregoing table. For the most of them their cause is lost and their money gone, for they cannot be expected to keep up annual assessment forever when the Government has control of the buying and apparently chooses not to do so.

PEOPLES OF THE AREA WERE ENCOURAGED TO PROSPECT AND DEVELOP

When the first claims and the rapid development within the area came about, it appeared from Circular No. 6 as amended in 18 Federal Regulation 6587, October 16, 1953, that the Commission ore-buying stations in Monticello, Utah, Marysvale, Utah, and Edgemont, S. Dak. Uranium mills were qualified at the following places, Uravan, Colo.; Rifle, Colo.; Grand Junction, Colo.; Durango, Colo.; Naturita, Colo.; Hate, Utah; and Salt Lake City, Utah. Since that time the openings of the fields in New Mexico, Arizona, Oregon, and Wyoming have been brought about and additional plants granted within the States of Colorado and Utah. And quoting from a paper presented by Jesse C. Johnson, Director of Division of Raw Materials, Atomic Energy Commission, presented to the Fourth Annual Conference of the Atomic Industrial Forum, October 28, 1957, at New York, N. Y., at that time we had about 5 million tons of domestic ore reserve.

By January of 1955, the Atomic Energy Commission had received reports from their field men of a known reserve of 115,000 tons in the lignites. These figures were complied from exactly 10 claims. Assays determined from samples at that time showed values below minimum to contents of over 18 percent uranium. Drill samples by the Atomic Energy Commission showed many tests on claims where apparently uranium content was in excess of 1 percent. Very little more known uranium existed in the State of Wyoming at the time they were offered a purchasing station in Riverton. At the time of their assay those 10 claims would have contained more than 1 percent of all known reserves in the United States.

At all times the peoples were encouraged to develop their claims so that the Atomic Energy Commission would have more information as to the extent of the area. I believe typical of the attitude created was set forth in the letter by Mr. Evenson.

Time after time we were told, "patience, patience." "Mining is a slow, slow process." "It will take time to develop the process, but there will be one."

Letters of intent were issued to the Standard Pipeline Co. headed by Wiley Moore, of Atlanta, Ga., and the Ohio Oil Co. group who were doing their research through the Catalitic Construction Co. Also during this time International Resources were pursuing the same program as the Ohio Oil group but working through the Grand Junction Operations Office rather than at Washington level. In May of 1957 we were told the economical price would be $10.50 per

pound for the concentrate and that they were thus committed to the Ohio Oil Co. and they would stand by that commitment with any other company now working on the process.

I would like to refer to the hearing before the Committee on Interior and Insular Affairs (Subcommittee on Mines and Mining) on H. R. 4748. At this time Mr. Johnson acknowledged the work being done by International Resources and I refer to page 24 where he states, "Another company also has given our Grand Junction office an informal statement that it would probably be in with a proposal within the next few months."

On page 30 he stated, "I think that if the uranium can be produced at an economic price they will have a market and my opinion is at the extention at this time in view of the facts set forth in the Commission's letter, seems equitable." He further stated at that time that our domestic concentrate is now costing us on an average of something around $10 a pound of U_3O_8 which I assume should be considered an economic price, as later on page 42 he states "a price for concentrate of approximately $10 a pound would be economic." I believe that this should answer the question that an economic proposal has been made.

The question has been asked upon the quantities of uranium in the area. I believe tht Commission has accepted the figure of 900,000 tons of proven reserve. I also believe that this figure is mainly the figure as submitted by the Ohio Oil Co. group. However I do not believe I would be out of line saying that this is one of the largest known deposits of uranium that has existed without benefit of any buying program. At the time they started the purchase program in Wyoming it was much smaller reserve than this and now claiming upward of 15 million tons.

I further wish to quote from Mr. Johnson's testimony on page 28 of the aforementioned hearing when he states "I am confident that the lignite deposits of the Dakotas will be a valuable source of uranium for a period of 10 years or more from now—if not economic at the present time—when we have large supplies of relatively low cost material available." And he further states on page 31 "* * * we have carried the program along sufficiently so that it should be completed, even though it is not economic, because the time will come when these deposits will be required, I feel certain of that." He further testified that we should know or determine during the next 12 months whether the lignites could be economically utilized.

While this is not a statement guaranteeing any company a period of 12 months, I believe our old friend "the reasonably prudent man" would assume we are going to get somewhere in the next 12 months and if anybody does we will have a market.

The companies working on the process would assume that every consideration would be given them if they would come up within the $10.50 price. Should all the miners of the area be made to suffer because the company negotiated through a subordinate office instead of at Washington. Was there not a duty upon the Government if they were to close down their program for new mills, on the 1st of October, to so inform such companies as International Resources to either have a proposal submitted by such time or abandon their program. Mr. Johnosn in his paper presented in October at New York City, stated "If new contracts are considered, preference will be given providing a limited market for areas having no present milling facilities." We have such an area.

Was there not a commitment existing to International Resources Corp. which was recognized by the Atomic Energy Commission in a letter addressed to the Honorable Joe Foss, Governor of South Dakota, on July 29, 1957, when the chairman stated that firm proposals had been received from both mining and development corporations (the Ohio Oil Co.) and International Resources Corp. And that an agreement upon a contract or contracts would depend primarily on arriving at a satisfactory price arrangement.

We realize mining is a speculative game and that possibly more people lose than gain, but we do not all like to lose because it took us more time and more effort to get a market. Are we to distrust our own Government when they make an appeal for minerals, or for shipyard workers as in World War II, or for enlistments in the service, or for any or all of the other causes that the Government must go back to its people for.

The help that has been given in the past by the Commission is greatly appreciated, in particular the consideration granted by Mr. Johnson, but as a little man thousands of miles away from the Government it is hard to see how the door can be closed at this time.

As so ably put by the Commission in a letter urging adoption of H. R. 4748 that not to pass the bill would be to allow third parties to benefit from the original locator's efforts. So if no contract is awarded to a processing company now, third parties in the future will benefit for the work of the men who developed the area.

Respectfully submitted.

DONN BENNETT,
President of Four States Uranium Association, Buffalo, S. Dak.

Senator MUNDT. In conclusion, just yesterday there was brought to my attention another problem confronting uranium producers in another part of South Dakota, in the Edgemont area where we first became commercial in this business, and where a mill is now in fact, and has been for some time, processing uranium. It seems that the implementation of the order which has reduced the purchase of uranium has tended to work a disadvantage to the small producer in that area, who is a casual seller and producer of uranium.

I would like to direct the attention of this committee to that particular problem, because we are all, I am sure, agreed that we would not want anything to come along which would work to the disadvantage of the individual producer who, on his own, has staked out a claim, who has gone into business, and who finds himself, because of a contractual situation, unable to sell sufficient uranium to stay in business.

Mr. Roy Chord, of Edgemont, S. Dak., one of the early people in the business, and the president of one of the smaller uranium corporations in the area, will be here to speak for himself. But I did want to direct the attention of the committee to that precise problem which is somewhat different than the one I was discussing in connection with the uranium in the lignite area.

Chairman DURHAM. I am a little surprised to find as many small producers as there have been before the committee. I am glad to have them. Usually it is nobody but the larger operators who have appeared before us.

Senator MUNDT. Yes. I have known the chairman of this distinguished committee for a long time, and I know of his concern for the small fellow in our American economic life. One of the gratifying things about uranium is that at the moment, at least, it is participated in by a host of producers, many of them small. I think it would be a healthful and a wholesome thing if we could encourage the production of uranium on the basis that the small producer shares equitably and fairly with those larger corporations which belatedly now are getting into the uranium business.

Chairman DURHAM. There is one thing which has not been brought out in the committee hearings which I think is important, and that is the unemployment, increasingly, in those States, and how far reaching it is. It must be growing very rapidly all the time.

Senator MUNDT. Of course. And in this thing, we run into the same problem we are constantly confronted with in the Senate and House, and that is what do you do in the kind of world in which we live when you find your home markets closed up because you are importing from abroad something you could sell if produced at home.

This is a very complicated subject. Nobody wants to get the world out of gear with a war, but it is a situation which, however we resolve it, it seems to me, should be resolved in such a way that the small,

domestic producer should not be caused to pay the full price of supporting our American foreign policy.

Chairman DURHAM. I read the other day where Canada is shipping uranium to Europe. Probably with the situation as it is today, without permitting our producers to export their product, they will probably capture the market, a market which I think has great potential.

Senator MUNDT. It certainly does. I freely confess that I do not know anybody so wise, and I doubt if Solomon himself had the genius, who is able to find the answer to the situation which we confront as free enterprises. In a world confronted with an economic war from a totalitarian state, we can at least, to me, resolve that if this becomes necessary foreign policy, it should then be supported by the general public, and not by the individual little uranium producer, or, perhaps, in your community, the textile producer, who gets caught in that particular kind of a squeeze.

Chairman DURHAM. I have probably made predictions at times that have been wrong, but I think I can speak from the knowledge I have gained in seeing Europe, for 6 or 8 weeks this last year, and to me they have to have the fuel if they build reactors. The biggest supply in the world at the present time is here in our own backyard. But yet we are suffering from this kind of a situation.

Senator MUNDT. Yes. As you continue this very commendable study in which you are engaged, I am sure you will direct part of your attention to the international aspects of this problem.

Chairman DURHAM. From what we know now at the present time, all of the uranium in the countries of Eastern Europe is in the hands of Russia. There is very little outside of that at the present time which is known. There is a little in France and in Portugal. They told me that that is one thing they are looking for in the mountains and everywhere else.

Senator MUNDT. It would seem to follow that that being true, in the interest of national security it is important that in this counry we not only have available uranium and uranium in the ground, but we should have mills capable of producing it if we need it quickly.

Chairman DURHAM. I am firmly convinced that in Europe there will be a power-development program, and they will have to get the money from someplace, in order to support their population. England has already gone all out with a loan, and there are parts of the world where they have no uranium, outside of Canada and the United States. I think the matter of exploration is one of the things we should continue, because we ought to at least know how much we have if we are going to build atomic plants here.

Senator MUNDT. I could not agree with the Chairman more that while the surplus of uranium, like the surplus in agricultural products, may cause temporary headaches, it is nothing like the headaches we would have if we had a shortage of either.

Chairman DURHAM. Thank you very much, Senator.

Have you any questions?

Representative HOSMER. I have no questions.

Senator MUNDT. Thank you very much.

Chairman DURHAM. Senator Young, I believe, had a statement to make.

Come forward, Senator Young.

STATEMENT OF HON. MILTON R. YOUNG, A UNITED STATES SENATOR FROM THE STATE OF NORTH DAKOTA

Senator YOUNG. Thank you, Mr. Chairman. It is a pleasure to appear before the committee. May I file a statement on behalf of my colleague, Senator Langer?

He had a prepared statement, but has a conflict of hearings this afternoon and he could not get away.

Chairman DURHAM. Without objection, it may be filed.

(The document referred to follows:)

STATEMENT OF SENATOR WILLIAM LANGER, NORTH DAKOTA

Gentlemen, I appear before you to strongly urge the serious need for a uranium-processing mill in the area of the lignite fields of North and South Dakota and eastern Montana. I know that you will have many witnesses before you to express the many reasons why such a uranium-processing mill should be approved by the Atomic Energy Commission, so therefore, not desiring to be repititious, I shall present a concise statement to fortify our position of the great need of this uranium-processing mill near the uraniferous lignite fields.

It should be noted that the Senators and Congressmen from the States of North Dakota, South Dakota, and Montana appeared recently before the Honorable Jesse Johnson, Director, Division of Raw Materials of the Atomic Energy Commission and later before the Honorable W. F. Libby and John F. Floberg, Commissioners of the Atomic Energy Commission. They were accompanied by a large delegation of claimholders from the States of North Dakota, South Dakota, and nearby areas and received attentive response to what one Commissioner says was a "persuasive presentation" made at the conference as to the need for the uranium-processing mill.

The spokesmen for the various delegations pointed out that over $2 million has been spent in preparation for a contract to construct a uranium-processing plant on a hope given by the Atomic Energy Commission that a contract had the prospect of culmination.

I noted from an article in this morning's paper, "A Governor, 2 Congressmen, and 14 representatives of the uranium-ore industry in Wyoming, New Mexico, and Arizona accused the Atomic Energy Commission yesterday of leading the industry out to the end of a limb and then sawing it off."

I wish to impress upon this committee the fact that this $2 million that has been spent in preparation for the construction of a processing plant in the Dakotas, not only represents large sums of money by industries who were encouraged by the Atomic Energy Commission to proceed with the hope of a contract, but, in many instances, represents the life savings of many little claim-holders in the Dakotas who have spent everything that they have and can possibly borrow for the hope of the construction of a uranium-processing plant in their area. Failure of the granting of a contract for the processing plant would be ruinous to these claimholders. This fact was made crystal clear to the Atomic Energy Commissioners when they appeared before them as I have mentioned herein.

It is incumbent upon the Congress, as well as the executive branch of the Government, in these perilous times of hydrogen bombs and missiles and various forms of atomic energy that we be assured that there is a sufficient stockpile of uranium-ore concentrate, not only to meet the needs of the United States, but the needs of our allies, if it is necessary for the security of our Nation and the security of those who aid us in resisting our common enemy.

We have been reliably informed that not only would uranium be produced from the lignite fields, but special byproducts such as power, petrochemicals, oils and tars, and others would be produced from such an operation, all of which will be of great benefit to the security and economy of our Nation.

Gentlemen, I wish to advise you that the congressional delegations from the Dakotas and Montana are in the fullest accord in the great and serious need for the construction of a uranium-processing mill in the uraniferous lignite area, not only for the tremendous boost in industry in that area, but because of the great value that it will render to the security and the economy of the United States.

Senator YOUNG. Mr. Chairman and members of the committee, this whole subject has been covered very well by the preceding witnesses. I do not have much to add. I would like, however, to have my statement inserted into the record and make a comment or two, if I may.

Chairman DURHAM. Without objection, that may be done.

(The document referred to follows:)

STATEMENT OF SENATOR MILTON R. YOUNG

Mr. Chairman and members of the committee, I want to thank you for affording me and the other members of the congressional delegation from my area this opportunity to appear before you in behalf of a uranium-processing mill for our area.

Uranium was first discovered in southwestern North Dakota in 1954. Since that time, a vast amount of work has been done, both by individuals and by several companies interested in the development of these deposits. We have an estimated 900,000 tons of reserves in North Dakota, South Dakota, Montana, and Wyoming. By far the largest portion of these reserves are of uraniferous lignites.

The period from the discovery of uranium in commercial quantities until now has been spent in trying to develop a process economically feasible for the extract of uranium from lignite. Many companies, including Ohio Oil, International Resources, Catalytic Construction Co., and others, as well as the Atomic Energy Commission, have spent a considerable amount of money in developing this process. They now have one, and last fall a proposal was submitted to the Atomic Energy Commission for the purchase of uranium concentrate at a price within the limits set by the Commission. Unfortunately, however, just a few days before this proposal was submitted to the Commission the Commission set a policy against encouraging the development of uranium industries in new areas.

Because of this decision, the development of the uranium industry in this area has come to a standstill. As I mentioned, large sums of money have been spent by individuals in developing this area. I hope, therefore, this committee will recommend a change in the policy of the Atomic Energy Commission, thereby enabling our area to obtain a uranium mill.

The decision of the Commission is, apparently, based upon the fact that we have considerable known reserves of uranium.

However, these reserves, according to a statement of Mr. Jesse C. Johnson, Chief of the Raw Materials Division of the Atomic Energy Commission, represent only a 10-year supply at our estimated 1959 rate of production. Certainly, in reaching this decision, a number of variables were involved which could mean that we do not have even a 10-year supply. I refer specifically to the use of atomic energy in power generation, as well as other civilian uses. As these programs develop, it is very probable that this estimate will prove to be short.

At the present time, this is one of the few areas in the country with a considerable body of uranium ore which does not have a processing mill. The development of uraniferous lignites would represent the development of a new source of uranium. As a matter of national security, it is highly important that this large source of uranium be developed, at least to the state where it would be available in large quantities immediately in the event of any future war. I hope that this committee will see fit to recommend a change in the policy of the Atomic Energy Commission.

Senator YOUNG. I was greatly interested in the last statements about the need of having a supply of uranium on hand in the event of war. I understand we have about a 10-year supply now. But if we get into more uses of uranium for power generation and other civilian uses, that supply may not last that long.

Chairman DURHAM. That 10-year supply is based, as I understand, is based on the use of it at the present time, and not on a projected 10-year use, which would probably double the use or triple the use.

Senator YOUNG. And we are importing uranium now, I understand, at a cost higher than we can purchase it for here. My understanding

is the same as the preceding witnesses that the people out in that area, particularly International Resources, were proceeding on the assumption that if they could meet the price of the Atomic Energy Commission, they would be granted a contract. Unfortunately, the policy was changed, after a lot of people including the claim holders out there spent a great deal of money. I think it would be unfortunate now if their policy did stand, and this area with a large deposit of uranium was left undeveloped. It would help a great deal for future needs if there was only one mill out there, so that we could more fully develop the process of extracting uranium, so that in the event of a war, and a greater need, we would have a larger supply available immediately. Another point that I do not think has been touched on is the byproducts that would result from the extraction process.

In my visits with Ohio Oil Co. officials, they seemed about as much interested in the byproducts as they were in the uranium extraction itself.

It is very important that a mill be established out there, and I hope this committee may see fit to recommend to the Atomic Energy Commission that they reverse their policy and establish a mill. Thank you very much.

Chairman DURHAM. Thank you, Senator Young.

The next witness is Governor Foss.

STATEMENT OF HON. JOE FOSS, GOVERNOR OF SOUTH DAKOTA

Governor Foss. Mr. Chairman, and gentlemen of the committee, it is a pleasure to be here. I will hurry through this. I realize you have been listening for a long time.

The people of my State are very much interested in seeing the development of the uraniferous lignite deposits in the northwest corner of our State, and this area also overlaps into the States of North Dakota, Montana, and Wyoming.

A number of people and interests in our State have been working and spending their time and money toward the developing of these uranium reserves, beginning in 1955. Through my personal contacts and the work done by our industrial development and expansion agency, we have followed these activities closely and I would like to give a brief summary and also the reasons why we feel that this development should proceed.

Our original contacts with concerns interested in the developing of a satisfactory process and the construction of a mill were in October 1955. Three companies became interested at approximately the same time. Those companies were Ohio Oil Co., Standard Pipeline Co., and International Resources Corp.

The Ohio Oil Co. was actively interested until September 1957 and spent approximately $900,000 in their exploratory and development work.

The Standard Pipeline Co. received a "letter of intent" from the Atomic Energy Commission similar to the one written to Ohio Oil Co., but as far as we can find out, little else was done by them.

The third company, International Resources Corp., is still very much interested in the construction of a processing mill. We have worked with them since October 1955, and we always assumed that they were being considered in the same category as Ohio Oil Co. and

Standard Pipeline Co., although they did not have a letter of intent from the Atomic Energy Commission. This provided for the purchase of uranium oxide at a maximum price of $10.50 per pound, providing other contract conditions were satisfactory.

International Resources informed me that they submitted a proposal to the Atomic Energy Commission on August 15, 1956, and later submitted an amended proposal on July 2, 1957.

Both were submitted to the Grand Junction District Office.

Progress seemed to be rather slow, so July 17, 1957, I sent the following telegram to the Chairman of the Atomic Energy Commission:

Would like to strongly urge that uraniferous lignite processing plant be seriously considered for construction in South Dakota. Information indicates construction of a plant a necessary factor in determination of the practicability of the process. Considering the amount of money expended to date, indication is that it would be very good business to proceed to definitely evaluate the economics of obtaining uranium from lignite. Your serious consideration would be appreciated and we stand ready to assist in any way possible.

JOE FOSS, *Governor.*

I received a reply from Lewis Strauss, Chairman of the Atomic Energy Commission, as follows:

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington, D. C., July 29, 1957.

Hon. JOE FOSS,
Governor of South Dakota,
Pierre, S. Dak.

DEAR GOVERNOR FOSS: This is in reference to your telegrams of July 17, 1957, addressed to me and to Mr. Jesse C. Johnson, Director of the Commission's Division of Raw Materials, urging that serious consideration be given to the construction of a processing plant for the treatment of uraniferous lignites in South Dakota.

As you may know, the Commission has constructed only 1 uranium milling plant to treat uranium ores out of the total of 12 such plants now in operation in this country. In the future we do not intend to build additional plants of this type and will continue to rely on private companies for the construction of needed uranium mill capacity.

We have given a great deal of thought to the treatment of uraniferous lignites from North and South Dakota and have carried out an extensive series of laboratory and pilot-plant tests in order to develop a method for recovering the uranium values economically. We have also discussed the purchase of uranium concentrates with several groups interested in the area. Firm proposals have been received from two of these, Mining & Development Corp. and International Resources Corp. These proposals for the sale of uranium concentrates to the Commission have been studied by the Commission's staff, and arrangements are now being made for meetings with representatives of each of the two companies. Agreement upon a contract or contracts will depend primarily upon arriving at a satisfactory price arrangement.

The extraction of uranium from the Dakota lignite involves processing steps which may result in higher milling costs than in treating normal uranium ore. Until we have had an opportunity to discuss costs and prices with representatives of the companies, we will not be in a position to determine whether mutually satisfactory contract arrangements can be negotiated. We shall make every effort to reach an early decision. You will be kept advised. Thank you for your interest in this work and for your offer of assistance.

Sincerely yours,

———— ————, *Chairman.*

We had a meeting with members of the Atomic Energy Commission staff in Senator Karl Mundt's office on August 1, 1957. In addition to myself, Senator Mundt, Senator Francis Case, Representative E. Y. Berry, and several others were present. At this time the matter was thoroughly reviewed by Jesse Johnson. Ohio

Oil Co. had not as yet ceased to have an interest in a possible contract. Standard Pipeline seemed to be out of the picture, and of course International Resources was still actively proceeding with their pilot-plant studies and developing factors necessary to determine whether a mill would be feasible at or below the price of $10.50 per pound.

It was the understanding at that time that even though International Resources did not have a letter of intent, the same agreement applied to them. Therefore, they proceeded to work diligently with the AEC Grand Junction office toward the ultimate objective of getting a contract.

International Resources is now offering to negotiate a contract based on $9.64 per pound as indicated in a statement by John J. McIntyre, secretary of the company; I would like to refer to his statement in the record, which also indicates that this price has been calculated by eminent and highly rated engineers and construction people. Financing is assured by the largest and best rated underwriters in Denver, Colo.

Another statement that I would like to make reference to, which is already a part of the record, is by Donn Bennett, president of the Four States Uranium Association. This statement indicates that 66 individuals and groups spent $2,440,718 in the exploration of ore and in research and development of a satisfactory process.

I believe that these people are entitled to every consideration because they spent their time and money at a time when in the interest of our Nation's welfare and defense was judged to be dependent upon an adequate supply of uranium, and, as you gentlemen know, at the encouragement and instigation of the AEC.

There are tremendous lignite reserves, consisting of an estimated 600 billion tons, most of which contain uranium. We believe this should be developed, since it would provide an entirely new source of domestic uranium.

Chairman DURHAM. Has that been proven?

Governor Foss. That is their estimate; yes, sir.

This can only be proven by the construction of a processing mill. Only by this means can the full extent of the ore reserve and the practicability of this reserve be determined.

We know that you will give this matter serious consideration, and, as Governor of the State, I am very happy to be able to give the information which I have given in this statement.

Chairman DURHAM. Governor, it means quite a bit to your State economically; does it not?

Governor Foss. Yes, sir; it does. You could take it two ways. There are a lot of people in the area that have engaged in this prospecting, and who have, with serious intent, really thought they were developing something for the United States.

They have more or less gone out on a limb.

Chairman DURHAM. How is it mined?

Governor Foss. With bulldozers and other pieces of heavy machinery. In prospecting they have used the bucket diggers and have worked over the whole area. A number of them, of course, are in other businesses, such as ranching. In off time, they have gone out prospecting. They have gone to considerable expense, because it was felt that it was something that the country really needed.

In our State, in North and South Dakota, or any of those States in that area, we are all more or less dependent on a single economy, and that is that of agriculture. So, when we do not have a good year, agriculturally speaking, we are in bad shape.

A perfect example of that is the past season, where we had rains throughout the area, and probably the best crop that we have ever had, and, of course, our bank deposits broke all records in this past year of 1957.

Chairman DURHAM. Does it seem that corn grows on top of this, over these beds?

Governor Foss. No, sir. Actually, in this area it is grazing area. In some of the area, of course, it is covered with pine trees. But it is out in the ranching area.

There is a lot of it, of course, right adjacent to the wheat country. I would say the bulk of the uranium is in the grazing country.

Chairman DURHAM. Have you any questions?

Representative HOSMER. I have no questions.

Chairman DURHAM. Thank you very much, Governor. It has been nice to have you here.

Senator CASE. Mr. Chairman, Roy Chord, whom Senator Mundt mentioned, and who was the first producer of uranium in South Dakota, is here and he has a statement reduced to writing.

Chairman DURHAM. Does he want to testify?

Senator CASE. He is a good, salty miner. I think you might want to hear him for a few minutes, if you have the time.

STATEMENT OF ROY C. CHORD, REPRESENTING THE EDGEMONT, S. DAK., MINING DISTRICT

Mr. CHORD. I do not wish to talk, but if you have any questions, I can answer them.

Senator CASE. Perhaps he could read the first couple of paragraphs.

Mr. CHORD. Thank you, gentlemen, for this opportunity of coming here.

Chairman DURHAM. You may proceed with your statement.

Mr. CHORD. I guess you could call me a pioneer in this game. I started in 1949. I was lucky and mined and shipped the first uranium ore from South Dakota.

I would like to talk about the present situation of the small uranium producer.

Chairman DURHAM. What kind of ore did you ship in those days?

Mr. CHORD. The carnotite. We do have pitchblende, or what they call primary ore, also. We are finding that now in the western flank of the hills northwest of Edgemont. We find the black ore. There are two distinct types. They usually refer to them as the yellow ore and black ore.

Chairman DURHAM. There are about three types of ore, then, in the State?

Mr. CHORD. Yes. Well, there are really very many types of uranium ore.

Chairman DURHAM. Yes.

Mr. CHORD. I would like to talk about the present situation of the small uranium producer. It used to be that work and luck sometimes

would make you a large producer. I guess that is why most of us got into it. I believe that is true; that many small producers of today are potential large producers if given a fair chance. Now we are frozen wherever we were in 1957, and cut in half. That takes away all of the fun and most of the money. You can lose like you used to, but you cannot win. I am talking about the producers in western South Dakota and eastern Wyoming who ship to Edgemont, and the same conditions may exist elsewhere.

I would like to mention here that that mill, I believe, covers the largest territory. It probably covers twice as much uranium-producing territory as any other single mill in the United States. There are seven distinct and separate ore-producing areas that it supplies in eastern Wyoming, and the northwestern flank of the hills, around Belle Fourche, Carlyle, New Haven, Pumpkin Bluffs, and North Douglas, besides the Edgemont area. A producer is rated big, small, sick, or dead by what he produced in 1957, regardless of the value of proven ore or past production from his property. The quota stays on the property. You can't use it on a later discovery on other property. This quota is what had to be evolved when they cut us off. Actually, they stopped shipping entirely for about 2 weeks, and then they gave us limited quotas for January.

Now they are establishing the quotas on the basis of what we hope to get for a 400-ton mill. My report covers that. The rules were changed without warning in the middle of the game. The present quotas will put most of the small producers out of the uranium business. The large producer is not much better off. The curtailment almost precludes any possibility of a return of capital investment before the property is depleted.

It is true there that, if you have a large operation, it is economical. You have certain fixed costs that, if you didn't produce anything, you would still have to meet them. I am sure you understand what I am trying to say. I didn't intend to bring my personal problems here, but I have four partners in Black Hills uranium, and I would like to show how they are affected. The property was staked in 1951.

It consists of 145 claims in the heart of the Edgemont uranium field. A one-half interest was sold to 3 partners for $375,000. The company then spent $55,000 for mining equipment. It has nine good mines and many untouched outcrops. A reserve of several hundred thousand tons of ore seems reasonable. In 1955, it was the largest producer in the area, with a gross of $217,000. The proposed quota is 2 tons per day, or $12,000 gross for this property, today. At this rate it will take my partners 400 years to recover their investment and about 800 years to deplete the property.

The mill has been running over capacity, or about 500 tons per day. The stockpile has been increasing at the same time. This mill is an all-custom mill and has no mines of its own in the area. The best allotment mentioned so far is 400 tons per day, and Government and mill intend to liquidate all stockpiles by 1962. This requirement, added to the curtailed quotas of the 5 largest producers, will take an estimated 350 tons of the 400 allowed, leaving about 50 tons to be divided somehow among 61 remaining producers.

I don't believe there is any surplus problem until we become more secure, but, if true, the remedy should be provided by the creators of

the surplus or, at the very least, on a prorated-tonnage basis among all producers, whether they be the miller with a mine or the miner without a mill. We are the miners without a mill.

We are told that it will get better after 1962, but whoever is forced out of the market until 1962 is dead. It's bad enough, even with an established price, to operate as a captive mine with your production controlled by the mill's delivery schedule, but no one should ever forget that after 1962 the mill has a guaranteed price until 1966. Meanwhile, the miner has nothing.

We are assured that there will be a market for the next 10 years and asked to recover our investment over this longer period. I am sure we would be more impressed if the Government and the mills were not so insistent on bailing out their stockpiles by March 31, 1962, and if we were given a reasonable assurance that the price in that interim market would have an equitable relationship to the guaranteed price the mill received from our Government during the same time and would not be subject to the results which could occur from the monopoly the mills would have over the market during this time.

The proposed quotas for the shippers to Edgemont are based on a formula that seems inequitable to me. It invokes a severe penalty on the shippers of high-grade ore in direct contradiction to the practice of the AEC of paying a premium for this same high-grade.

The formula works as follows: If you shipped 1,000 tons of 0.30 ore containing 6,000 pounds of U_3O_8 in 1957 and your quota was half of your 1957 production, you would get a quota of 500 tons. The figure of half is approximately what they are cutting us.

But, at 4 pounds per ton, or 2,000 pounds, you would now have only one-third of your original 1957 shipment in pounds of U_3O_8 and, if conditions forced you to continue to ship 0.30 ore, your 2,000-pound quota would only allow you to ship 333⅓ tons or one-third your 1957 tonnage.

All that depends on how clean your ore is and how well you mine it. It would seem equitable to all to use as a basis the pounds of U_3O_8 shipped, as that is the only true measure of the value of a ton of ore.

I want you to put on record the fact that, under the 400-ton-per-day allotment, it has been decided not to pay us for the vanadium content from now on at Edgemont, which the Government is committed to buy, until March 31, 1962, and has firmly established the commitment by paying for it the past several years.

The vanadium is not recovered at Edgemont, but is run in with the slimes and can only be recovered when the demand justifies the cost of recovery. It has been stated that the values in the Edgemont ores are low. The loss of the vanadium means a cut in the price received by us of $1.50 to $3 per ton.

I have noted some confusion in regard to the legal or moral guaranty by the Government to purchase our ore. I'd like to add a little to it. My conviction that we had a guaranteed market is based on, first, Circular 44, dated September 23, 1953, which said:

> The United States Atomic Energy Commission has extended the guaranteed minimum price schedule for uranium ores of the Colorado Plateau area. * * * The Commission's Domestic Uranium Program Circular 5, Revised, has been extended to cover the period through March 31, 1962, from its previous expira-

tion date of March 31, 1958. * * * The actions were taken for the purpose of continuing the Commission's program of encouraging the production of uranium ore from domestic sources.

I would like to say that I and all the other miners believed that was a guaranteed price. I cannot see any other meaning to those words.

The question then arises, and it has arisen, about the quantity limitation, so I read in the AEC announcement of May 24, 1956:

The new domestic procurement program provides a guaranteed market for all uranium concentrates produced by domestic mills from domestic ores subject to a limitation, at the Commission's option of 500 tons of U_3O_8 per year from any one mining property or mining operation.

I am sure no small producer's property has exceeded this limitation in the Edgemont area.

It is true that this covers the period from 1962 to 1966 but we read further on:

This action was taken in recognition of the need for a continuing Government market in order to maintain a high rate of exploration and development—

and last:

The new domestic uranium procurement program provides assurance of a Government market for an additional period of almost 5 years beyond March 31, 1962.

It seems reasonable that the AEC meant a continuing market and an assured market to 1962, not one disrupted by curtailing the purchase of ore from the miner without a mill from 1958 to 1962 and then eliminating entirely all assurance of any equitable market, but meanwhile maintaining a guaranteed market for the miller with a mine steadily through to 1966. If there has been a later interpretation to this effect, I don't believe it was published.

No personal criticism is intended of the actions of anyone concerned in this statement.

Some of them are my friends and I know how difficult and unpleasant it was to have to make such decisions. But it is wrong to place the whole burden, resulting from the inevitable errors of the whole buying program on the shoulders of those least responsible and least able to bear them, the small uranium producer.

I thank you.

Chairman DURHAM. Thank you very much, Mr. Chord.

Is Mr. Keller, of the Homestake Mining Co. here?

Evidently not.

Congressman Usher L. Burdick also would like to file a statement.

Without objection, he can file his statement in the record.

(The statement referred to follows:)

STATEMENT OF HON. USHER L. BURDICK, MEMBER OF CONGRESS FROM NORTH DAKOTA

URANIFEROUS PROCESSING PLANT FOR NORTH DAKOTA

Mr. Chairman, much of the material has been already covered in previous testimony before this committee. I heartily concur in what has been said by Congressman Berry, Senator Langer, and others on this subject. There is absolutely no question in my mind but what a uraniferous processing plant in the lignite area would be a wise investment from a Government standpoint. Much is to be learned about processing uranium from lignite. There is an excellent chance that with further exploration new and more efficient methods of ex-

traction might be found. The lignite areas of the Dakotas and eastern Montana may well prove of extremely significant importance insofar as our national defense is concerned.

Put up the plant. The uranium is there. Nothing should stand in the way of establishing this uraniferous processing plant when the information to be gained from working with our lignite and its byproducts can be of such significant national and international importance.

Mr. Chairman, I thank you and the committee for your time.

Chairman DURHAM. The record will be held open until March 15, 1958, and, without objection, any further letters or statements concerning the uranium industry which are received by the Joint Committee prior to that date will be inserted in the record at this point.

(The letters referred to follow:)

UNITED STATES SENATE,
COMMITTEE ON ARMED SERVICES,
February 28, 1958.

Hon. CARL T. DURHAM,
Chairman, Joint Committee on Atomic Energy.

DEAR MR. CHAIRMAN: I enclose a letter from Mr. A. F. McClaine, Mr. G. H. Allison, and Ben F. Butler, all of which refer to the problems of uranium producers.

I would appreciate it very much if each of these letters could be included in the record of the hearings on this matter and considered as part of the testimony.

Thank you very much.

Sincerely yours,

HENRY M. JACKSON,
United States Senator.

SPOKANE, WASH., *February 21, 1958.*

JOINT CONGRESSIONAL ATOMIC ENERGY COMMITTEE,
Care of Senator Henry M. Jackson,
Senate Building, Washington, D. C.

GENTLEMEN: As a representative of two companies substantially interested in uranium mining activities, both in Wyoming and Montana, as well as indirectly in the State of Washington, I have been particularly disturbed and shocked by what amounts to the AEC saying to mining operators, "Sorry, boys; we told you we would buy any and all $U_{3-8}O_8$ concentrates at a fixed and scheduled price until 1962, but we can't really do this now; there is too much ore coming in, and we have to go back on our solemn pledge to you."

Coupled with this position, but not generally stated or reported, is that, from a factual standpoint, AEC bought through 1957 some 11,826 tons of foreign-produced concentrates, largely from South Africa and Canada, but only bought 8,640 tons of domestic-produced concentrates. To the best of my knowledge, they are continuing to buy foreign-produced concentrates. AEC appear to be "little friend of all the world" while knifing in the back hundreds of small American producers, who, in good faith, relying on the solemn pledge of AEC, spent their money to search for, find, and develop domestic ore supplies. Such procedure and policy seem almost incredible and unbelievable, yet it appears to be a fact outside of some stuttering around with vague talk about reexamination and reconsideration of possibly distressed areas.

I am yet enough of a believer in fair play between man and man, and between man and his Government, to feel the Joint Atomic Energy Committee of our Congress will meet this situation properly, fairly, and honestly by saying to the AEC, backed with authority from whatever higher administration source is needed or required, "Your covenant and pledge to the mining industry must and shall be kept."

It is my sincere hope that my faith is not misplaced, and that the Atomic Energy Committee will act at once to halt the inequities in the uranium-concentrate purchase program.

Most respectfully,

A. F. MCCLAINE.

SPOKANE NATIONAL MINES, INC.,
Spokane, Wash., February 19, 1958.

Hon. HENRY M. JACKSON,
Senate Office Building, Washington, D. C.

MY DEAR MR. JACKSON: It has been brought to our attention that there will be a hearing in Washington, D. C., February 24, 1958, to consider the present Atomic Energy Commission's milling position.

Not being able to attend the meeting to represent our stockholders, I wish to express my thoughts for your consideration on this problem prior to this hearing.

It is my conviction the time has arrived for the American system of doing business to take over as far as possible, and the following suggestion might be a satisfactory solution to the problem.

It is suggested that a new commission be established which would have complete and absolute control of all free-world production, present and future, of all ores of uranium and the milling thereof. This commission could work with the Atomic Energy Commission as to the needs of private industry for uranium. The proposed commission's membership should be appointed, and the selection should be equally from small and large producers of uranium.

Because of a number of factors that have arisen in the uranium industry, the present position of all producers is chaotic and demoralizing. Milling capacity is inadequate in the Pacific Northwest and overbuilt in other areas.

In the Big Indian Wash of Utah, as an example, I feel that the present milling arrangements should be changed so that the present mills would have to mill all mined ore from their area on a pro rata basis similar to the method now in operation within the petroleum industry.

In areas that are relatively new or completely new, such as eastern Washington, the same production-control basis could be used, with the exception that a new milling facility could be approved by this new industry commission if private industry could prove adequate potential production. With only 1 mill in this area, limited total independent production is limited to 2 tons per day for all producers, and this tonnage is not economical for just 1 producer.

I understand that the AEC now have contracts with present mills for the production of all the yellow cake they need or are authorized to purchase. If this is true, we could still have new milling facilities and still not have overproduction of yellow cake by setting up this industry commission that would issue monthly quotas for all mills. This could be handled exactly as the Railroad Commission of Texas handles crude-oil production. The present mills are mostly owned or controlled by large companies and are in a complete monopoly position sanctioned by the United States Government.

It would be to the best interests of all the people of this country and its allies to have diversified milling capacity and develop potential areas not only for military use but for industrial uses.

Another major problem is the guaranteed-price structure that has been adopted and publicized by the United States Government. Many hundreds of thousands of small, private investors have placed their money in uranium mining because of Government-guaranteed prices. In actual effect, however, by not authorizing new milling facilities where needed and not purchasing present mined ore, the AEC has repudiated the guaranties.

We need a sound, clarified policy by the Atomic Energy Commission that will allow the small investor a chance to get a return on his invested capital. The uranium industry's production should be controlled by the laws of supply and demand, even under Government complete control.

The AEC should have more funds appropriated for the development of the uses of uranium and for research of new potential uses. Uranium is 1 of the 2 greatest energy materials we have yet found. If we are to conquer outer space, we need a constant fuel available for many months' time without refueling. Present missile fuels are a far cry from the potentials of atomic fuels.

We have proven the marvels of atomic power in our submarines. We have had the benefits of Mme. Curie's lifetime work in curing diseases, but we haven't even started to develop the many uses of uranium for industrial or scientific use.

Your help and support to get the Atomic Energy Commission the necessary funds and the proper and fair method of production allocation for all mines and mills will be a real service to the American people and a promising new industry.

Sincerely yours,

G. H. ALLISON, *President.*

REPUBLIC, WASH., *February 18, 1958.*

Hon. HENRY M. JACKSON,
United States Senate, Washington, D. C.

DEAR SENATOR JACKSON: A recent article in one of the mining papers states there is to be a meeting before the Joint Congressional Atomic Energy Committee on the 24th and 25th of February to discuss the present uranium conditions.

The economy of this part of Washington will depend to a certain extent on the AEC living up to certain promises made a few years back. We are enclosing newspaper clippings that may have escaped your notice, which pretty well illustrate the need of an AEC ore-buying program if the uranium industry is to succeed for the small miner.

We, of the Ferry County Prospectors & Miners Association, earnestly ask your aid and cooperation in giving the small uranium prospector and miner the chance to develop his claim and to market his ore. As you are aware, a great deal of time and considerable amount of money have been expended by the small miner in this area.

We are confident that you, as you have in the past, will interest yourself in this present matter.

Sincerely yours,

BEN F. BUTLER,
President, Ferry County Prospectors & Miners Association.

SEATTLE, WASH., *February 19, 1958.*

Hon. CARL T. DURHAM,
Joint Congressional Atomic Energy Committee,
House Office Building, Washington, D. C.

DEAR CONGRESSMAN DURHAM: Members of the West Coast Mineral Association of Seattle, Wash., are very much interested in uranium-mining companies and feel that more consideration should be given to the mining of uranium in the State of Washington.

We feel that future demands will probably exceed the present production, and at our meeting of February 17, 1957, a resolution was passed recommending that the present contracts with mining companies producing uranium concentrates be continued and that new contracts be granted to mining companies having properties with a favorable indicated large tonnage of moderate-grade ore.

Respectfully yours,

WEST COAST MINERAL ASSOCIATION,
By LEWIE WILLIAMS,
Acting Secretary.

SEATTLE, WASH., *March 12, 1958.*

Hon. CARL T. DURHAM,
Joint Congressional Atomic Energy Committee,
House Office Building, Washington, D. C.

DEAR CONGRESSMAN DURHAM: This supplements the letter of February 19, 1958, from the West Coast Mineral Association here in Seattle, Wash., in regard to the uranium situation. The recent hearing indicates that there may be stockpiling of uranium concentrates and some of the States such as South Dakota and Wyoming have been allowed an increase in tonnages.

The State of Washington should also be included, and our association recommends a 700-ton per day mill in Okanogan County which would serve both the Republic and Simialkameen or Nighthawk areas. In the Republic area the Mount Leona region has about 2 million tons which should average about 0.23 U_3O_8, and the Nighthawk area an indicated 8 million tons which should go to 0.121 percent U_3O_8. We also think that the Dawn mill at Ford, Wash., should be allowed an increase of 200 tons per day, as this would allow more custom tonnage for the other properties in the Spokane area.

Our new uranium properties must be developed; otherwise we will be faced with the same problem when the present foreign contracts expire; namely, a shortage of uranium ores. Another point is that the foreign producers are paid on the basis of United States gold, and this is a disadvantage to the domestic producer.

Respectfully yours,

WEST COAST MINERAL ASSOCIATION,
W. A. RICHELSEN, *Secretary.*

Chairman DURHAM. This completes the hearings on the problems of the uranium mining and milling industry. The committee will adjourn until tomorrow afternoon at 2 p. m. to reconvene here in this same room, to continue hearings on the development, growth, and state of the atomic energy industry.

(Whereupon, at 4:10 p. m., Tuesday, February 25, 1958, the hearing recessed, to reconvene at 2 p. m. Wednesday, February 26, 1958.)

(NOTE.—The balance of the hearings of February 19, 1958, and those of February 20, 21, 26, 28, and March 3 and 4, 1958, are printed separately, entitled "Development, Growth, and State of the Atomic Energy Industry.")

APPENDIXES

Appendix 1

United States Atomic Energy Commission,
Washington, D. C., October 28, 1957.

Uranium Production in the United States

Remarks prepared by Jesse C. Johnson, Director, Division of Raw Materials, United States Atomic Energy Commission, for delivery before the fourth annual conference of the Atomic Industrial Forum, New York, N. Y., October 28, 1957

I am glad that uranium resources and production have become a part of the discussions at these conferences sponsored by the Atomic Industrial Forum. A study of the availability of nuclear fuels, and the economics of their production, is basic to the consideration of atomic power as a major source of industrial energy.

These discussions should be particularly valuable to the uranium producers who are looking ahead to the industrial market and attempting to estimate the growth and size of that market. Even the reactor and the power experts differ on forecasts of atomic-power growth and uranium requirements so you can appreciate the position of the uranium producers who have a capital investment in mines and mills totaling nearly $1 billion.

The United States Government market has been almost entirely responsible for the development of the uranium industry outside Russia and its satellites. This market was for military requirements for the common defense. Had it not been for these military requirements, which in turn were responsible for the raw-materials program carried out by the United States Atomic Energy Commission, there would be little basis for the broad atomic-power development now under way in this country, or the extensive atomic-power program of the United Kingdom, or the survey by Euratom for an even larger program. The limited known uranium resources of 10 years ago would not have justified these projects. The present position of atomic-power development is due to the efforts of the uranium prospector and miner, as well as to those of the scientist and nuclear engineer.

The Atomic Energy Commission's uranium program, which was initiated less than 10 years ago, moved slowly at first and then rapidly gained momentum. Production greatly increased during the past 4 years but a major increase will come in the next 12 to 18 months with the completion and operation of a number of large Canadian and American uranium mining and milling projects. Free-world production in 1957 is expected to be about 21,000 tons of U_3O_8 and the estimate for 1959 is in excess of 40,000 tons with more than 30,000 tons coming from the United States and Canada.

Ten years ago we were dependent upon the Belgian Congo for more than 90 percent of our uranium. Production in Canada and the United States was insignificant by today's standards and known ore reserves were equally meager. At that time the only possibility of large additional production from any known source was the recovery of uranium from South African gold tailings. Here the problem was to develop a process to recover economically less than 1 pound of uranium oxide per ton of material treated. Except for the South African gold ores, any major increase in uranium production had to come from new discoveries, unless we were prepared to pay $30 to $50 a pound for uranium from low-grade phosphate and shale deposits.

Answers were found to the metallurgical problems involved in processing South African gold-ore tailings. Mill construction began early in 1951, making this our

first major new uranium production project. The South African gold-mining industry deserves great credit for the speed with which the large engineering and construction program was carried out and for the efficiency of the milling operations. South Africa now is producing approximately 6,000 tons of U_3O_8 per year.

South African production was not enough. New sources of uranium had to be found and brought into production. Our instructions were to get as much uranium as possible from every available source, but production from the North Amercian Continent was particularly important for obvious strategic reasons.

Consequently, the program of 1948 to stimulate exploration concentrated on the United States and Canada. There were no specific reasons for great optimism except that there was a vast mineral-bearing territory in which to search. Any chance for even a measure of success in a short time depended upon enthusiastic participation by hundreds, if not thousands, of prospectors, geologists, and mining organizations.

These considerations led to the establishment of uranium-purchase programs in both the United States and Canada. The programs had to provide time for exploration and development and at least a 5-year production period. Also, there had to be an adequate reward in terms of potential profits for the discovery of important deposits. The initial programs fell somewhat short in meeting these objectives and were revised accordingly. We worked closely with the Canadian Government and received its full cooperation. Production figures speak for the success of these two nearly parallel programs. In my opinion, this cooperative program for discovery and development offers one of the finest examples of the effectiveness of private initiative at work in a free society.

I think that this background is important to an understanding of our domestic uranium program and its problems, of our long-term overseas uranium commitments, and of our commitments to Canada.

Now let me review our domestic program and some of the problems with which we are faced.

In 1948 our known uranium ore reserves were estimated at about 1 million tons, averaging approximately 0.20 percent U_3O_8. The possibility of major additions to these limited reserves was a matter of hope and could not be measured on the basis of specific evidence. The search for uranium-bearing carnotite ores in our Western States had extended over a period of nearly 40 years, first for uranium as a source of radium and then for vanadium which also is a constituent of carnotite. Except for a brief period in World War II, when vanadium was in great demand, the search had never been intensive or sustained.

This record of prospecting and exploration, together with reports on the ore deposits that represented known reserves, was the basis for the design of our domestic uranium program. The objective was to get as much immediate production as possible and to provide practical incentives for widespread private exploration and development. Experience indicated that the sedimentary-type carnotite deposits generally would be small and scattered and that small milling operations would have to draw on large areas for ore supply. The best chance for really large production seemed to lie in finding vein-type pitchblende deposits which, in the past, had been the source of most of the world's uranium.

One of the surprises of the past few years has been the size of our sedimentary-type deposits and the extent of the ore reserves developed in areas with no significant surface exposures. The Big Indian Wash district in Utah, and the Ambrosia Lake field of New Mexico are examples of major discoveries by drilling. The outcrops in the Gas Hills district, Wyoming, provided little indication of an important uranium area. Because of the widespread exposure by erosion of the sedimentary beds in which the uranium is found, it was expected that surface outcrops would give better indication of the size and extent of our uranium resources.

With the development of million- and multimillion-ton ore bodies, and the accumulation of geologic data, private drilling campaigns have expanded greatly and ore reserves have increased rapidly.

We now estimate domestic ore reserves at about 70 million tons, averaging about 5 pounds of uranium oxide per ton. A year ago our reserves were 60 million tons, 2 years ago 25 million tons, 3 years ago, 10 million tons, and 4 years ago 5 million tons.

Most of our ore reserves now are in deposits ranging from several hundred thousand to several million tons. Earlier most of our deposits were less than 100,000 tons. Small mining operations still provide a substantial part of our

uranium production, but with the discovery of larger deposits the trend has been toward larger mining operations, both underground and open pit.

With such a wide range in the size and type of operations, any average figure for mining cost would be of little value even if such a figure were available. In general, uranium mining has proved a profitable business for both small and large operators. Of course, some operations are marginal and many have failed. Uranium exploration, as is the case in the search for any mineral, involves a high degree of risk. Millions have been spent in drilling barren holes and in prospecting without results. However, persistence usually has paid off.

As yet we have no large underground mines. The largest are in the Big Indian Wash district, Utah, where total production is about 2,000 tons of ore a day. The largest producers in this district have a daily output of from 300 to 600 tons. These mines are fairly well mechanized. A representative figure for mining cost would be about $11 per ton. This cost includes development, direct mining, depreciation on plant and equipment, local taxes, insurance, and other indirect costs, but does not include royalty or property acquisition costs. Direct mining constitutes about one-half of the total cost.

In the Uravan district of Colorado, originally our main domestic ore source, production is about 1,700 tons of ore a day, but the largest producers will average no more than 70 tons. The output per man is low because of the limited opportunity to use mechanical equipment effectively. The ore deposits are irregular, with low angle dips, and are usually thin except for "rolls" which often carry the ore below the haulage levels. Development and mining costs are high, and in many cases up to 5 tons of waste must be handled for each ton of ore produced. Mining costs may average $20 a ton, but costs are different for each mine, and for different periods in the life of an individual property. Direct mining again is about one-half of total costs.

The White Canyon-Monument Valley district of Utah is another of our more important areas of underground mining. This district has not yet reached full production, but experience to date indicates mining costs may average about $16 a ton.

The largest domestic underground mines will be in the Ambrosia Lake district, New Mexico, where ore reserves are now estimated at about 30 million tons. This ore will be mined from shafts ranging from 350 to 1,000 feet or more in depth. For most of the district the ore ranges from 5 to 24 feet in thickness, although drill holes have shown thicknesses of as much as 80 feet. Present plans call for mine production of about 8,000 tons a day, but the individual operating units will have production rates of only 500 to 1,000 tons. Some of the larger companies may have several such operating units. These mines still are in the development stage and, as certain mining problems have not yet been fully evaluated, good cost estimates are not available.

Open-pit uranium operations, as in the case of underground mining, show widely different costs, depending upon the stripping ratio, the topography, and the size of the deposits. Again some operations are marginal and some are highly profitable. The lowest costs probably are obtained at some of the small, shallow mines. In some cases the operator has practically no capital investment; stripping, loading, and trucking are all contracted to earth-moving concerns. Most ore now produced from open-pit operations may invove a cost of about $8 a ton. However, in the Gas Hills district, Wyoming, where mining will be mainly open pit, large operations are just getting underway.

As in the case of mining operations, it will not be possible to present more than a broad generalization of the treatment costs for the uranium mills of the western United States. There is a wide diversity of uranium recovery circuits, mill capacities, and ores treated. The initial milling operations engaged in uranium recovery were constructed and operated for vanadium recovery and the circuits revamped and adjusted to produce uranium concentrate as a by-product. As additional uranium ore reserves were developed, these initial milling operations went through several expansion stages, to assist in meeting the United States requirements for uranium concentrate. These mills are still operating today. In addition, mills that later were built specifically for uranium recovery have undergone several stages of expansion. Also, due to the development of improved and cheaper uranium recovery techniques 7 of the 9 uranium ore processing mills which were in operattion before 1956 have installed new processes and revised their original circuits. This includes the new Rifle complex of Union Carbide Nuclear Co., which still start operation this winter to replace the old Rifle mill, one of the oldest uranium-vanadium mills now operating.

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There are now 14 uranium mills in production with an aggregate capacity of about 10,000 tons per day. All of the mills have sulfuric acid leaching facilities for uranium recovery, although this is only a scavenger operation at two of the mills which primarily use a sodium carbonate leach for uranium and vanadium recovery. In addition, two mills have both acid and carbonate circuits as separate operations in order to process a variety of ores, especially those of high-lime content. To produce an acceptable uranium concentrate, 2 of the mills employ a fusion step for purification, 3 mills precipitate directly from purified leach liquors, 2 of the mills use column ion exchange, 6 of the mills have basket type resin-in-pulp ion exchange circuits, and 3 use liquid-liquid solvent extraction. The respective mills range in capacity from slightly less than 300 tons per day to about 3,300 tons per day. Six uranium mills, having a third of the total uranium ore milling capacity, also recover vanadium.

Dual and expanding circuits, custom ore milling, conjunct vanadium recovery and the multitude of circuits being used for uranium recovery do not resolve into a discernable cost pattern. However, based on information which the Commission has available, the current direct and indirect milling costs, exclusive of major replacements and amortization, range from $8 to $15 per ton for the smaller mills and $7 to $10 for the larger mills. If a mill is recovering vanadium, $5 to $8 should be added for an overall processing cost per ton.

The two most influential cost factors are capacity, since the labor costs and fixed charges will vary inversely according to the tonnage treated, and chemical costs, which are influenced by the character of the ore being treated. For a regenerative sodium-carbonate circuit, chemical costs will normally range from $1.50 to $2.50 per ton but can increase considerably if pulp aeration is replaced by chemical oxidizers. For acid circuits, the chemical costs will range from $2 to as high as $7 per ton. The extreme range for acid circuits is the result of the acid consumption in leaching, which ranges from 40 to 400 pounds per ton, and averages about 180 pounds. A mill may recover some of the acid costs by charging a "lime penalty" in purchasing custom ores.

The cost of building a uranium ore processing facility in the United States ranges from $5,000 to $10,000 for each ton of daily capacity, depending upon the size of the operation. Assuming 5 years for amortization, the amortization charge would be from $2.80 to $5.50 per ton.

The average cost of processing uranium ore has been reduced by approximately one-half since 1953. This has been accompanied by a gradual increase in overall uranium recovery from the low eighties to the current average of more than 90 percent.

With lower milling costs, due to improved metallurgy and larger mills, lower prices are being negotiated for domestic uranium concentrate despite higher labor and material costs. The average price will be reduced further as contracts with older high-cost mills expire and the newer mills are amortized.

The average price paid for domestic concentrate in fiscal year 1956 was $11.60 per pound of U_3O_8 and in 1957, $10.50. The estimate for the current fiscal year is $9.60 and for 1959, $9.30. These prices include a factor for amortization on a 5-year basis and are based upon an estimated normal grade of millfeed. Prices may be somewhat lower or higher depending upon whether the millfeed grade is higher or lower than the estimate used for the base price.

It is interesting to compare these prices with the average prices in United States dollars for foreign concentrate. The average price paid by the Commission for foreign concentrate was $10.90 per pound of U_3O_8 in fiscal year 1956 and $11.15 in 1957. The estimate for 1958 is $11.15 and for 1959, $10.70. All contract prices, domestic and foreign, have been negotiated on the estimated costs of production or are related to audited costs of production. In the domestic program, ore cost is based upon the prices contained in the Commission's published ore-buying schedule and not upon mining cost.

These price differences do not indicate the wide differences in the uranium content of the material processed. Recovery from South African gold tailings averages about one-half a pound of U_3O_8 per ton. In Blind River, Canada's major uranium field, recovery will be about 2 pounds per ton of ore. In the United States, it is about 5 pounds.

South Africa is able to achieve relatively low production costs because most of the tailings processed are a byproduct of gold mining which bears the mining, crushing and grinding charges. Also, the plants all have large capacities, ranging from 1,500 to nearly 7,000 tons per day. Acid consumption is low because the gold ores are about 95 percent silica. Even with these operating

advantages, the South African program would not have been attractive to the South Africans or to the Commission on the basis of a 5-year contract and 5-year amortization. Because of the low-grade ore and the large capital cost per unit of production, the average amortization charge per pound of U_3O_8 on a 10-year basis is nearly twice that of domestic mills on a 5-year basis. This, together with the need for a long-term assured uranium supply from the only major new source known at the time, was responsible for the 10-year South African milling contracts.

Uranium bears all of the mining and milling costs in Blind River. There are no byproducts at present although thorium may become one. Treatment of the Blind River ores, as in the case of the South African, involves low chemical costs.

Domestic mills have the advantage of a much higher average grade ore bu this is offset to a considerable extent by higher milling costs due to the chemical and physical characteristics of the ore and lack of uniform millfeed. Furthermore, under the Commission's ore-buying schedule, the mills must absorb a trucking allowance of as much at $6 per ton of ore. For individual mills, the haulage allowance usually averages from $1 to $3 per ton.

In the early years of the program, mill capacities ranged from 100 to 200 tons of ore a day. Because of greater ore supply and larger ore deposits, most of the new mills have a daily ore capacity of from 500 to 3,000 tons. Some 200-ton mills still are needed to serve local areas with a limited ore supply.

The 14 domestic uranium mills in operation have a combined daily capacity of approximately 10,000 tons of ore. Eight additional mills under construction or contract will about double that capacity. With the 22 mills in full operation, approximately 7 million tons of ore will be processed annually.

Domestic concentrate production is at the rate of approximately 10,000 tons of U_3O_8 a year. By early 1959 it is expected to be 15,000 tons or more. Canadian production in 1959 also should be 14,000 or 15,000 tons. South Africa is producing about 6,000 tons a year. Total free world production of uranium oxide should reach 40,000 tons or more by the end of 1959.

Britain will take part of this production; French production always has been reserved for France's own program; other countries may be acquiring uranium. However, the United States will continue to be the major uranium market. Its purchase commitments cover more than 80 percent of this estimated total production.

Uranium deliveries under the Commission's present domestic and foreign commitments appear adequate for military and power requirements as projected on an annual basis for the next few years. Furthermore, we are in the fortunate position of being able to expand, substantially, domestic production in case of a sudden increase in requirements. Canadian production also could be expanded.

Consequently, we have arrived at the point where it no longer is in the interest of the Government to expand production of uranium concentrate. It has been apparent for some time that this point was being approached. Reference was made to the changing uranium-supply situation in the Commission's report to Congress on the development, growth, and state of the atomic-energy industry (the so-called sec. 202 hearings) in early 1956 and again in 1957. In my talk to the National Western Mining Conference in Denver in February of this year, I stated that, "Now that we no longer are faced with a uranium shortage, our methods of operation must be reviewed in the light of changed conditions." Since the beginning of this year, the possibilities of additional major increases in domestic uranium production have become apparent.

It would be undesirable, from the standpoint of industry, as well as the Government, to expand the uranium production rate beyond currently projected requirements and then be faced with a major curtailment at some later date. The objective should be to have a strong uranium industry, with substantial ore reserves, capable of expanding to meet the requirements for atomic power as these requirements develop.

Under these circumstances, the Commission, at this time, is faced with limiting commitments for additional domestic uranium production. Proposals for domestic contracts which already have been submitted and are under review still will be considered in the light of the discussions which have taken place. In some instances, these discussions were initiated a year or more ago.

With respect to new proposals between now and 1962 for additional mill construction or mill expansion, the objective of the Commission will be to limit production to the approximate level which will be reached as a result of existing

commitments. If new contracts are considered, preference will be given to providing a limited market for areas having no present milling facilities. Extensive development of new areas, or producing areas, should not be based upon the assumption that there is a current market for all the uranium that can be produced.

As for foreign purchases, no new commitments have been made for several years. On the contrary, foreign commitments have been reduced by releasing to the United Kingdom material which was under firm contract to us.

This reference to the current problem should not create the impression that we have too much uranium. The immediate objective is to keep production and requirements in reasonable balance, but the long-range problem is to develop additional ore reserves for our future requirements. We cannot deplete existing reserves and expect to meet future military and industrial needs as they arise.

This country's present ore reserves of 70 million tons represent only a 10-year supply at the 1959 production rate. We now lead the world in uranium production, but we cannot maintain this position without aggressive exploration and development. In considering the rapid expansion of ore reserves during the past 3 years, the importance of 1 small area should be emphasized. If we eliminate an area in New Mexico that could be included in a circle having a 15-mile radius, we would have only about a 3-year ore supply at the 1959 production rate. There is no guaranty that areas of similar importance will be found. We certainly are not safe in projecting ore reserves on the basis of the past 3 years' experience. We also should consider another factor—rarely in the history of mining has the search for a metal been so intensive and widespread as that for uranium. That search will continue as long as there is a favorable outlook for the uranium market.

Canadian and South African known reserves will support their presently planned production rates for 20 or 30 years. Canada's position as a leading uranium producer is based principally upon one discovery, the Blind River field. Blind River contains more than two-thirds of Canada's known uranium reserves, and soon will be supplying about two-thirds of its production.

Without the known reserves of the United States and Canada, the Western World would require new discoveries to support atomic-power development of the scale now planned. Of course, there are vast uranium reserves in the low-grade shale deposits from which uranium can be obtained at a cost of from $30 to $50 a pound. Uranium costs of that magnitude would make the achievement of competitive atomic power more difficult and more remote.

I believe that the uranium production rates now scheduled can be maintained for many years without resort to the low-grade, high-cost sources. However, this will require a continuing major exploration effort. If the more optimistic estimates of uranium needed for power requirements by 1970 or 1975—from 50,000 to 100,000 tons of uranium a year—are to be met, an intensive worldwide search must be started well in advance. There should be definite prospects of an adequate supply of uranium to justify the large atomic-power development program we have in this country. The power programs being undertaken or considered by European nations are based upon 5- to 10-year construction plans. A reasonable assurance of an adequate supply of nuclear fuel is essential to the initiation of such programs.

Therefore, if we are to achieve the atomic-power development anticipated in the next 10 to 20 years, uranium exploration and development should continue on a broad scale. The uranium producers cannot be expected to finance the development of ore reserves for future production without a present market and confidence in the future. The Commission's domestic concentrate program assures this country a major uranium-producing industry through 1966. The problem now is to provide an incentive for maintaining our ore reserves at approximately existing levels through replacement, by exploration and development, of the ore being mined. Much of this incentive will have to come from confidence in the future market for atomic power. I hope that the information presented at these conferences will contribute to that confidence.

Appendix 2

Uranium Ore Reserves and Ore Production

Remarks prepared by Elton A. Youngberg, assistant manager for operations, Grand Junction Operations Office, United States Atomic Energy Commission, for presentation before the symposium sponsored by the United States Chamber of Commerce and the Uranium Institute of America, Denver, Colo., December 16, 1957

INTRODUCTION

As background for your symposium on future uses of uranium, your chairman has asked me to summarize for you the domestic uranium ore-reserve and ore-production position. To provide you with this background, a look at the past is necessary. Since historical data are classified prior to July 1, 1955, we must limit our review to that date.

SUMMARY

To summarize quickly for you the historical picture, I have prepared the enclosed graph, showing the ore-production rate, ore-processing rate, stockpiling rate, and ore-development rate at regular periods since June 1955.

This graph brings out several facts which are significant in understanding our future production position and readjustments which must be made in light of present requirements. They are as follows:

1. The rate of development of new reserves has increased rapidly during the past 2½ years. In the first quarter of this fiscal year, new reserves were being added at a rate which would support a concentrate production rate about 5 times the current rate and about 2½ times that required to meet present contracted capacity. During the period from July 1, 1955, to date, as shown on the graph, the rate of addition of reserves has been about 10 times current mill requirements and 5 times contracted capacity.

2. Because of the rapid growth of reserves, as indicated by the development-rate curve on the graph, the production potential of the uranium industry may now equal or exceed foreseeable firm requirements. This has necessitated statements in regard to future contracting policies made by Mr. Jesse C. Johnson so that industry could intelligently plan future exploration, mining, and milling programs.

3. The aggressive past contracting policies of the Commission for new mill capacities have followed closely the ore-production capabilities of the industry. Recently, statements by Mr. Jesse C. Johnson that contracted production is in approximate balance with requirements, and that contracts for additional production will be limited to the approximate level of current commitments, are indicated on the graph by the leveling off in 1959.

4. Another significant production-readjustment problem is shown by the area between the ore-production curve and the ore-fed-to-process curve, which indicates the ores bought under the Government ore-buying program. The stockpiling program was used most effectively to provide a market, pending consideration of a mill. This program has served its purpose and is no longer needed. Government stockpiles now represent some 2 million tons, for which the Commission has spent $39,900,000. Because of the problem of working off stockpiles in competition with current production, the Commission has found it advisable to hold stockpiling prior to mill operation at a minimum.

ORE RESERVES

Present recorded ore reserves including stockpiles of 2 million tons now approximate 76 million tons. Actual developed reserves are probably approaching 80 million tons, based on general knowledge of reserve information which has not as yet been submitted to the Commission. These reserves are sufficient to supply our presently contracted mill capacity for more than 10 years.

The key to our future production capabilities is the rate at which new ores can be developed. Experience in recent years has been that industry can develop new ores for mining at a much faster rate than needed for the present indicated Government requirements. A better understanding of uranium geology and improved drilling technology has made this possible. Because of the shallow depths of many of the large-bedded deposits, it also has been possible to obtain ore

production quickly and at a high rate. I do not mean to imply that we have an unlimited uranium ore supply. However, our experience and knowledge to date does indicate that with a reasonable lead time and a ready market and adequate price, the mining industry can develop substantial additional supplies of uranium to meet peacetime uses. Our future production capabilities are supported by the fact that large areas within known favorable districts remain to be prospected and developed, and there are a number of untested exploration possibilities.

By far the most important domestic uranium district developed to date is the greater grants district in northwest New Mexico in which the Jackpile mine and Ambrosia Lake deposits are located. These deposits represent mineralized portions of the Morrison formation which extend for a distance of 110 miles in an easterly trend from Gallup to the Rio Grande trench west of Albuquerque. The width of this zone of favorable sands is unknown because to the north it extends under the Dakota formation where it has been penetrated only by scattered oil and gas tests. The Morrison sands are only locally lithologically favorable for uranium deposition; however, the fortuitous penetration of favorable zones in the limited Ambrosia Lake and Jackpile areas indicates full exploration o fthe favorable Morrison formation will most likely find additional deposits or districts. This district will be fully explored and developed as the need for uranium grows.

The Gas Hills-Crooks Gap area in west-central Wyoming is the second most important uranium province and has been under rapid development in the past 2 years. The initial development was handicapped because the surface ores were radiometrically out of balance with chemical analysis, the poor coring characteristics of the Wind River formation, and the apparent low grade tenor of much of the surface ores. The discovery of black ores at depth and improved grades, coupled with experience in evaluating exploration data, have been the principal reasons for the increased interest in the district. Considerable areas along favorable trends still remain to be explored. The area also contains large tonnages of low grade material which, because of low mining costs and new metallurgical techniques, may be ore. The addition of these ores would substantially increase the production potential of the district. The Wind River formation is widely spread in other basins of Wyoming which have not as yet been tested or are not fully explored.

The third most important domestic uranium province is the Uravan Mineral Belt, although it is not third in reserve position due to the high cost of developing and maintaining reserves. The district over the years has continued to respond to development to meet added mill supply requirements and is entering into the most productive period in its history. Better geologic understanding of the distribution of ores and ore controls has reduced exploration risks and permitted successful exploration along trends into deeper ground. The productivity of this district will in a large part depend upon vanadium prices and requirements. As noted later, this district has the highest per ton mining cost of the principal producing districts.

The Big Indian district's known favorable zone has been fairly well drilled out. Some additional ores are expected to be found with mining; however major additions must await a discovery which would extend the present favorable zone or the finding of another favorable area.

The Happy Jack mine first attracted attention to the Shinarump channels of the White Canyon, Red Canyon, Deer Flats areas of southeastern Utah. Exploration of other Shinarump channels led to numerous discoveries, although not as spectacular. The district has continually but slowly developed over the years to become one of the more important ore producing areas. Ore reserves have continuously increased over the years with mining. Surface exploration has only been effective in those areas where depths permitted economic drilling. Many of the channels extend under deep cover, and for this reason will have to be explored underground. Consequently, the full development of this district will require considerable time.

In recent years, developments in fringe areas indicate that significant contributions of uranium are to be expected from other the more commonly recognized uranium provinces just described. The sediments of the coastal plains of Texas, the lignite beds of North and South Dakota, the vein-type deposits of the Front Range, Nevada, Oregon, Washington, Utah, and California still remain largely untested, and offer exploration possibilities for the future and can be expected to make important contributions to uranium production.

The present ore reserves are concentrated in the districts, tabulated in table I and indicate the areas from which a large part of production in the immediate future will come. The production capabilities in each mining district after 1962 will depend upon the mine operator's ability to produce his ore under established prices for uranium concentrates. Mining costs presented later, coupled with mill costs being presented in other papers, should assist you in making your own evaluation of the production position of each district.

TABLE I.—*Ore reserves by districts, Nov. 20, 1957, and stockpiles*

Area	Tonnage	Percent U_3O_8
Grants (New Mexico)	51,400,000	0.26
Gas Hills-Crooks Gap (Wyoming)	7,200,000	.26
Big Indian Wash (Utah)	3,800,000	.43
Uravan Mineral Belt (Colorado)	3,500,000	.31
Monument Valley-White Canyon-Red Canyon-Deer Flats	1,900,000	.32
Other	6,000,000	.25
Subtotal	73,800,000	.27
Stockpiles	2,000,000	.28
Total	75,800,000	.27

In order that you can compare the domestic reserve figures with those published for other free world countries, the following table has been compiled from the best available information:

TABLE II.—*Ore reserves by countries—free world*

Country	Tons (ore)	Percent U_3O_8	Tons (U_3O_8)
United States	75,800,000	0.27	205,000
Canada	320,000,000	.12	380,000
South Africa	1,100,000,000	.034	370,000
France			50,000-100,000
Total free world (estimated)			1,000,000

The table of reserves, above, is made without definition of ore reserves. Consequently, the reserves listed may not be comparative.

The domestic reserves are compiled from actual engineering and geologic data following definitions for measured, indicated, and inferred ore used by the United States Geological Survey and the United States Bureau of Mines. Economic cutoffs on grade are used, which reflect expected mining costs and prices under circular 5, revised. The reserves as tabulated are those generally agreed upon in plant negotiations to reflect expected mill feed with some adjustments for dilution and are also those which banking houses have generally accepted from industry as a basis for financing. The domestic reserves quoted, therefore, may be somewhat more conservative than those quoted for other countries.

Before discussing mining costs, a brief review of the composition of the mining industry should provide a better understanding of costs.

To provide a basis around which to review the participation in the industry, the distribution of operators by quantities produced is presented in table III, page 8. The data represent the fiscal year 1957, which ended June 30, 1957.

EXHIBIT E.—*Number of producers distributed by range of annual production—Fiscal year 1957*

Range (tons) annual production	Shippers		Tons of ore		Percent of total	
	Percent	Number				
100,000 and over	10.2	6	3,064,978.97	1,871,835.00	55.7	91.2
10,000 to 100,000		40		993,405.41	29.6	
5,000 to 10,000		28		199,738.56	5.9	
2,500 to 5,000	89.8	29	294,255.71	104,550.71	3.1	8.8
1,500 to 2,500		31		56,339.07	1.7	
1,000 to 1,500		38		49,043.29	1.5	
500 to 1,000		54		38,919.30	1.2	
250 to 500		60		22,189.08	(1)	
100 to 250		78		12,603.78	(1)	
50 to 100		68		4,992.15	(1)	
Less than 50		295		5,618.33	(1)	
Total		727		3,359,234.68		

[1] Less than 1 percent.

Reference: Speech by Elton A. Youngberg, Assistant Manager for Operations, Grand Junction Operations Office, AEC, Dec. 16, 1957, p. 8.

So that you can see the number of individuals or companies which participated in years prior to 1957, the following table is presented to show the number of mine operators from the year 1954 to 1957:

TABLE IV

Number of mine operators:

1954	700
1955	748
1956	843
1957	727

As you will note from table IV, there has been a gradual increase in numbers of individuals or companies participating in uranium mining through fiscal 1956. In 1957 the trend was reversed when the number of producers decreased by 120. This reversal apparently was in part due to the fact that most surface outcrops had been found from which quick production could be obtained by the individual miners. Table III shows that there were still a large number of small operators active in 1957, when over 40 percent of the operators individually shipped less than 50 tons annually. It is apparent from these figures that participation by operators has not increased proportionately with production, indicating that the major part of the increased production is coming from larger producers. This has not been due to any policy of the Commission but reflects discoveries of multimillion-ton ore bodies which are capable of large production. For this reason, as shown in table III, some 91.2 percent of the ore production was delivered by 10.2 percent of the 727 producers in 1957. With the full development of the large deposits in the Ambrosia Lake and Gas Hills areas, there will be a further increase in the percentage of production by the larger producers. This does not mean that there will be a smaller tonnage produced from the small mines and custom shippers.

To broaden the participation in the industry as much as possible, the Commission has followed a practice of contracting for mill capacity for custom shippers. Table V, below, indicates the 1954 and 1957 percentages of contracted plant capacities which were available to custom shippers. Even though percentagewise participation of custom shippers has decreased from 1954 to 1957, the tonnage delivered by custom shippers to mills substantially increased between 1954 and 1957. I have not been able to show the actual tonnage as the historical data are still classified. Based on reserves held by milling companies and those held by custom shippers, proportionately the custom shippers have been allotted a larger share of the milling capacity based on 1957 data. For economic reasons, it is reasonable that the custom shipper should have a larger percentage because he cannot extend the production of his smaller reserves economically over as long a period of time.

TABLE V.—*Ore receipts by mills*

[Percent]

Fiscal year	Controlled properties	AEC leased mines	Custom shippers	AEC-owned stockpiles
1954	35	19	43	3
1957	48	3	39	10
Percentage of reserves: 1957	81	1	12	6

MINING COSTS

Five areas have been selected for a comparison of costs because of their general interest, and they represent a large segment of the domestic reserves. These areas are:

1. *Uravan Mineral Belt.*—These deposits are thin, averaging about 3 feet in thickness, and are discontinuous. The depth of present mining operations varies from a few feet to as much as 600 feet. The ground requires occasional support Estimated average grade of mined ore is 0.28 percent U_3O_8 and 1.00–1.25 percent V_2O_5.

2. *White Canyon-Monument Valley.*—These deposits are somewhat thicker and more continuous than the Uravan Mineral Belt, averaging about 4 feet in thickness. The depth of present mining operations varies from a few feet to 200 feet. Only occasional ground support is required. Estimated average grade of mined ore is 0.25 percent U_3O_8.

3. *Big Indian Wash.*—The thickness of these deposits varies from 4 to 20 feet, with an average of 6 feet. The ore is continuous over considerable distances. The depth of mining operations averages 550 feet. Ground support is required where stoping heights are to a shale parting and stoping widths are beyond ground strengths. Estimated average grade of mined ore is 0.35 percent U_3O_8.

4, *Ambrosia Lake.*—The deposits in this district average about 8 feet in thickness, with local thicknesses up to 100 feet. The depth of operations will vary 350 to 800 feet. Openings above the water table will require occasional support. Openings below the water table probably will require considerable ground support. Estimated average grade of mined ore is 0.25 percent U_3O_8.

5. *Gas Hills.*—Ores developed in this district to date will largely be mined by open pit. Ground can be broken by rippers and a minium of blasting will be required. Average thickness of ore is 6 feet. Depths of ore, from surface outcrops to 300 feet. Some deeper ores will be mined by underground methods. Estimated grade of mined ore is 0.225 percent U_3O_8.

The foregoing district descriptions have been presented with the thought of bringing to your attention the variable mining situations from which our domestic ores are being produced. As you can see, domestic mining costs necessarily vary within wide limits. Even within districts, mining costs of individual deposits will differ because of variable geologic conditions, sizes of ore bodies, and the human factor of management.

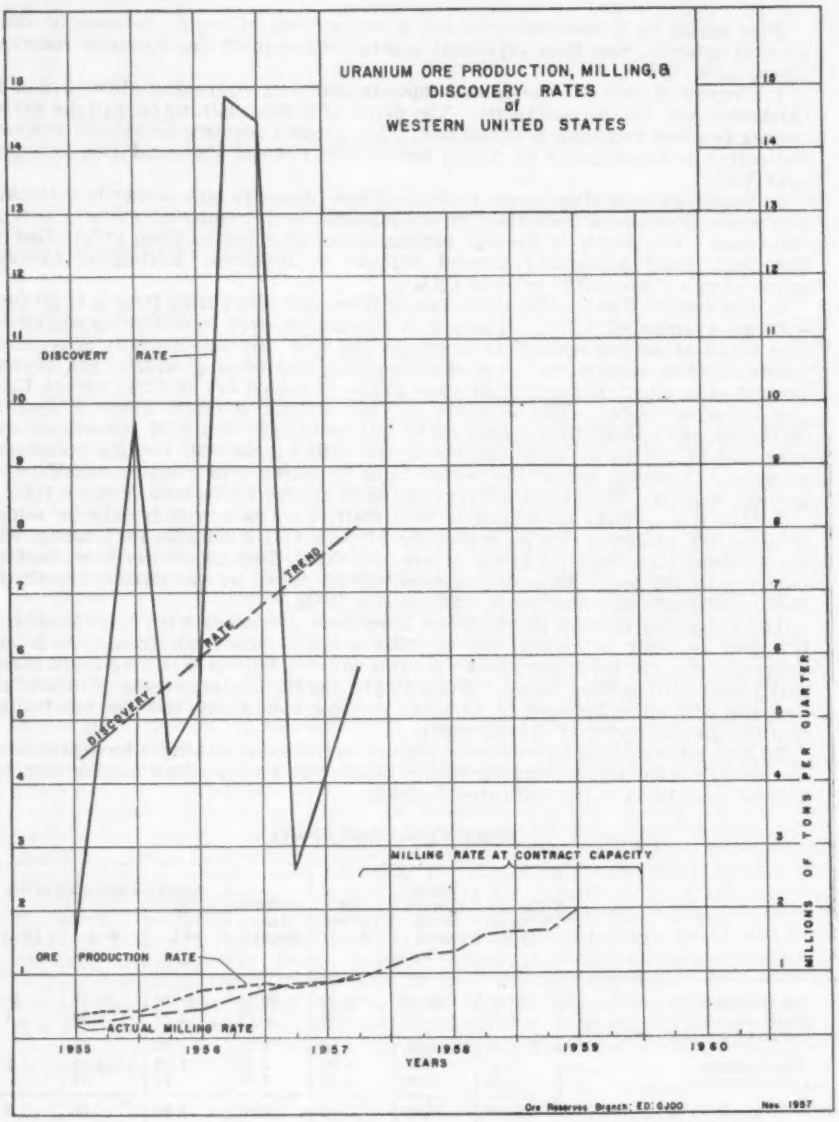
To help you evaluate the economic picture as related to mining, I have presented in table VI what our mining division considers to be a median mining cost for typical operations in the indicated districts.

TABLE VI.—*Mining costs*

	Uravan Mineral Belt	White Canyon Monument Valley	Big Indian Wash	Ambrosia Lake (grants)	Open pit stripping ratios		
					5—1	8—1	12—1
Exploration	$2.00	$2.00	$1.00	$0.50	$0.30	$0.50	$0.70
Development	3.00	1.50	1.00	1.50	2.00	3.20	4.80
Depreciation (plant and equipment)	2.00	2.00	1.00	1.00	.50	.50	.50
Direct mining	11.00	8.50	6.00	7.50	1.25	1.25	1.25
Indirect mining	2.00	2.00	2.00	1.50	.75	.75	.75
Total	20.00	16.00	11.00	12.00	4.80	6.30	8.00

It should be remembered costs of individual operations may vary considerably from these figures. In the case of open-pit operations, the cost per ton for stripping is dependent upon several factors. These are the overburden to be removed, the distance it must be hauled, and the amount of drilling and blasting required. A median cost of 40 cents per ton was used in arriving at the stripping costs used in the table above. This figure may vary from 25 cents per ton for unconsolidated overburden to 60 cents per ton for rock requiring extensive drilling and blasting.

These median figures include all costs, as exploration and development costs, direct and indirect operating costs, and depreciation. No costs for property acquisition or royalty are included. These are negotiated amounts and vary considerably.



APPENDIX 3

AEC'S OCTOBER 1957 ANNOUNCEMENT ON LIMITING URANIUM PROCUREMENT; STATEMENT MADE TO THE JOINT COMMITTEE ON ATOMIC ENERGY BY JESSE C. JOHNSON, DIRECTOR, DIVISION OF RAW MATERIALS, JANUARY 20, 1958

It is my understanding that at this meeting on raw materials, the committee desires a report on the Commission's decision of last October to limit domestic uranium procurement, and the conditions that brought about that decision, and the effects of that decision on the domestic uranium program.

The Commission's action was taken to avoid buying more uranium than was required for the operations of the atomic-energy program as now projected. A review indicated that annual deliveries under existing domestic and foreign commitments would meet annual requirements for the period between now and 1962. Another consideration was that production from existing sources could be expanded substantially in case of increased requirements. The tremendous increase in domestic ore reserves during the last 3 years, and the prospects of further major increases, indicated that there might be serious overproduction under a policy of unlimited purchases.

This was not the first action to limit uranium procurement. Until 1955, the Commission's problem had been to get enough uranium for the expanding military program. We had been buying all that was available from foreign as well as domestic sources and seeking to find new sources everywhere. In 1955, however, we limited foreign commitments because of the important developments in Canada and the United States. Although the domestic outlook had become much more favorable, there was no basis at that time for anticipating the phenomenal expansion just ahead.

Domestic developments since the beginning of 1955 have been most impressive. At the end of 1954 domestic ore reserves were estimated at 10 million tons; at the end of 1955, 25 million tons; at the end of 1956, 60 million tons; and today they are estimated at 75 million tons and may reach 100 million tons as a result of development work now in progress in producing areas.

Domestic concentrate production for the second 6 months of 1955 was 1,600 tons of U_3O_8 but at the end of the period was at an annual rate of 4,000 tons. Production for the calendar year 1957 was 8,600 tons and is now at an annual rate of approximately 10,000 tons. A year from now our annual production rate should be about 15,000 tons of U_3O_8 and before the end of 1959, with all new plants in full production, the rate should reach from 17,000 to 18,000 tons.

This rapid expansion of the domestic uranium industry, plus the possibility of continued rapid expansion unless checked, was the reason for the action taken by the Commission in October. As a result of that action no additional concentrate procurement contracts involving new milling facilities are being negotiated at present.

This change in our procurement policy has brought a flood of protests, particularly from those developing ore reserves with the view of undertaking milling operations. Most of these protests deal with individual problems, or the problems of local areas, but in nearly all cases the following arguments are made in support of the requests for relief:

1. Evidence is offered that the Commission encouraged and urged private industry to find and produce uranium for the national defense. It is therefore argued that under the program established, and the procedures followed in carrying out this program, private investors had reason to believe that they would have a Government market if they could find uranium and produce it at a competitive price.

2. It is argued that the Commission should provide relief for those who have developed ore at substantial expense and now find themselves with no adequate market, and that unless relief is provided by additional contracts for new milling facilities, many prospectors and mining organizations will suffer heavy losses and some uranium companies may face bankruptcy.

3. The domestic buying program should be continued to support further exploration and development in order that this country may be self-sufficient for its long-range uranium requirements.

Since most of the requests for relief are based primarily upon the assumption that the Commission has a responsibility to provide a market for the uranium ore that has been developed, it might be well to review briefly the domestic uranium program and the procedures followed during the past 10 years.

The domestic uranium program established in 1948 was designed to encourage private industry to explore for uranium and to undertake mining and milling operations. At that time, and particularly in 1951, 1952, and 1953, when the Commission's major expansion was planned and undertaken, the availability of adequate supplies of uranium presented a most serious problem. Representatives of the Commission, including Commissioners, made numerous public statements pointing out the need for additonal uranium and the importance of expanding domestic production. Reports issued by the Joint Committee on Atomic Energy in 1951 and 1952 stressed the urgent need for a greater effort to develop uranium production and emphasized particularly the importance of domestic production.

Although our published ore buying schedules always have been limited in scope, our ore-buying operations have been expanded to cover the purchase of any uranium ore of grades specified in the published circulars provided the uranium could be recovered at costs considered economic. The Commission's published commitment to purchase domestic uranium ores has been limited to deliveries made to its Monticello, Utah, buying station. In practice, however, a number of ore-buying stations have been established in various new districts in order to speed up mine development and production. These stations were closed as private mills were built to provide a local market for ore.

There has been no published commitment to negotiate milling contracts. However, the procedure has been to negoiate a milling contract on the basis of an adequate supply of ore and agreement upon a price for concentrate. For approximately 10 years nearly every milling proposal had led to a contract provided the conditions with respect to price and ore reserves were met and the company making the proposal furnished reasonable evidence of being able to fulfill the contract deliveries. There has been no assurance that this procedure would continue to be followed.

The existence of this procedure has become the basis for individuals and companies undertaking exploration, purchasing, and acquiring mineral rights and developing uranium mines. This program and these procedures have been directly responsible for developing our uranium reserves and making this country the world's leading uranium producer. It is doubtful whether these results could have been obtained with a more limited or more restricted program. It should be remembered that 10 years ago only a few small uranium dposits were known and this country was considered by a number of experts to have relatively poor prospects for substantial uranium production except at high-cost from low-grade shales.

As a consequence of the manner in which the domestic program has been operated, it is not surprising that the Commission's October decision to limit uranium procurement found a number of companies with substantial ore reserves and plans for mill proposals. In some cases there had been discussions regarding milling plans with our Grand Junction staff.

In Wyoming several companies, each of which claims to have spent approximately $1 million in developing substantial ore reserves, are requesting milling contracts. Probably more than a million dollars has been spent in developing uraniferous lignite deposits in North and South Dakota and we now have a milling proposal with a moderate price for concentrate. A million-ton ore body has been proved by drilling in Texas and a milling contract will be requested. Not only are the prospective milling companies and their stockholders involved, but much of the mining property controlled by these companies was obtained from the original locators or local development companies in return for stock, operating interests, or royalties. Consequently, a large number of people who have invested time or money in discovery and development have a stake in most of the proposed milling operations.

In the light of the circumstances I have just outlined, I am concerned over the problems of those who already have developed ore at substantial expense and who as yet may have no adequate market for their ore. I am having our Grand Junction office make a survey of the problems of the various uranium districts and the problems of the individual operators. The results of this survey, together with information presented by the uranium miners and their local organizations, will be submitted to the Commission for consideration. I hope that some reasonably satisfactory solution can be developed, within established procurement limitations.

One of the results of the October announcement has been a recognition on the part of the uranium industry that some limitation on expansion of uranium production is needed. A major expansion of mining and milling operations is now underway. There has been no cutback in domestic uranium procurement. We have reached the time, however, when the uranium industry must look to the growth of an industrial market for its future expansion, unless there should be a major increase in military requirements.

APPENDIX 4

ATOMIC ENERGY COMMISSION,
Washington, D. C., March 7, 1958.

ADDITIONAL DOMESTIC URANIUM PRODUCTION STATISTICS FOR 1957 ANNOUNCED BY AEC

The Atomic Energy Commission today announced monthly and annual statistics on domestic uranium production for 1957. Included were figures on uranium concentrate, rate of ore processing, domestic ore production, ore fed to process, ore stockpiling, and initial production bonus payments. The data were compiled by the Commission's Grand Junction Operations Office in Grand Junction, Colo.

Domestic ore reserves were estimated to total 78 million tons on December 31, 1957. This compares with 60 million tons estimated at the end of 1956. Ore receipts at all private plants and Government-purchase depots in 1957 totaled 3,676,000 dry short tons; ore fed to process totaled 3,575,000 tons, with an average 0.27 percent of U_3O_8; ore stockpiled as of December 31 was 2,033,000 dry tons; and $2,447,835 was paid during the year in initial production bonus payments.

At the end of 1957 there were 16 uranium-processing mills in operation, including the Government-owned mill at Monticello, Utah. Several new plants are scheduled to be completed in early 1958.

Uranium concentrates received at the Commission's depot in Grand Junction totaled 8,494 tons of U_3O_8, as follows:

Month	*Tons of U_3O_8*	*Month*	*Tons of U_3O_8*
January	592.5	August	734.3
February	585.6	September	729.7
March	739.6	October	714.7
April	737.1	November	661.0
May	805.1	December	810.0
June	682.1		
July	702.3	Total	8,494.0

An additional 146 tons were produced as a byproduct in the chemical processing of Florida phosphate rock in Florida and Illinois; from the treatment of Idaho euxenite at the St. Louis plant of Mallinckrodt Chemical Co.; and from reprocessing of refinery residues at Vitro Corp.'s Canonsburg, Pa., plant. Total United States production amounted to 8,640 tons.

RATE OF PROCESSING URANIUM ORES

Uranium-processing plants in the Western United States treated uranium ores at the following approximate daily rates during 1957:

Month	*Tons of ore per day*	*Month*	*Tons of ore per day*
January	9,000	July	9,900
February	9,400	August	10,300
March	9,300	September	10,200
April	9,200	October	10,200
May	9,600	November	10,100
June	9,600	December	10,700

DOMESTIC ORE PRODUCTION

Uranium-ore receipts at all private plants and Government-purchase depots during 1957 totaled 3,676,000 dry short tons:

Month	*Dry short tons*	*Month*	*Dry short tons*
January	269,000	August	324,000
February	262,000	September	332,000
March	296,000	October	326,000
April	281,000	November	317,000
May	297,000	December	381,000
June	301,000		
July	290,000	Total	3,676,000

ORE FED TO PROCESS

Domestic uranium ores fed to process during 1957:

Month	Tons	Average percent U_3O_8	Month	Tons	Average percent U_3O_8
January	279,000	0.28	August	319,000	0.26
February	264,000	.29	September	305,000	.26
March	288,000	.29	October	315,000	.25
April	277,000	.27	November	303,000	.28
May	297,000	.27	December	331,000	.29
June	289,000	.27			
July	308,000	.31	Total	3,575,000	.27

ORE STOCKPILES

Or stockpiles in the Western United States as of December 31, 1957, were as follows:

	Dry tons	Average percent U_3O_8
Private companies	672,000	0.27
Government	1,361,000	.28
Total	2,033,000	.28

INITIAL PRODUCTION BONUS PAYMENTS

Through December 31, 1957, a total of $11,528,577 had been paid on 891 properties as initial production bonus under the terms of Domestic Uranium Program Circular 6. Payments during 1957 were:

January	$383,490	August	$170,162
February	165,489	September	136,331
March	187,115	October	127,714
April	211,678	November	157,429
May	338,573	December	154,996
June	213,974		
July	200,884	Total	2,447,835

ORE RESERVES

Measured, indicated and inferred ore reserves were estimated to total 78 million tons on December 31, 1957. These are determined in accordance with the definitions for measured, indicated and inferred ore reserves as adopted by the United States Geological Survey and the United States Bureau of Mines and include only

material metallurgically amenable to treatment. Distribution of ore reserves by States is approximately as follows:

	Thousand tons	Percent U_3O_8
New Mexico	53,300	0.26
Wyoming	9,200	.26
Utah	5,700	.37
Colorado	4,100	.29
Arizona	1,400	.32
Washington, Oregon, and Nevada	1,900	.23
North and South Dakota	600	.25
Others (Texas, California, Idaho, Montana, and Alaska)	1,800	.23
Total	78,000	.27

(NOTE TO EDITORS AND CORRESPONDENTS.—This announcement is being issued simultaneously by the Grand Junction Operations Office, Grand Junction, Colo.)

APPENDIX 5

[Press release No. 114, January 21, 1958]

JOINT COMMITTEE TO HOLD PUBLIC HEARINGS ON AEC URANIUM ORE PROCUREMENT POLICIES

From the offices of the Joint Committee on Atomic Energy

Senator Albert Gore (Democrat, Tennessee), chairman of the Subcommittee on Raw Materials, announced today that the joint committee would hold public hearings on AEC uranium ore procurement policies, both domestic and foreign, during this session of Congress.

The subcommittee met with AEC Director of the Division of Raw Materials, Jesse Johnson, and AEC Deputy General Manager R. W. Cook on Monday, January 20, 1958. Following the meeting, Senator Gore spoke as follows:

"1. With regard to procurement of uranium from domestic sources, the Commission is undertaking a survey of the hardships and problems caused our domestic uranium miners by the October 28, 1957, AEC announcement limiting further domestic expansion. Copies of the survey will be forwarded to the joint committee on or before March 15, 1958.

"2. After receiving the AEC survey, the joint committee will hold public hearings on AEC uranium ore procurement policies, both domestic and foreign. Members of the public, and representatives of the uranium mining and milling industries, will be invited to testify.

"3. With regard to procurement of uranium from foreign sources, the Commission agreed not to make any new commitments, or to extend existing contracts, until the joint committee has completed its study of AEC uranium ore procurement policies, and has discussed the situation further with the AEC."

APPENDIX 6

ADDRESS BY SENATOR ALBERT GORE BEFORE THE NATIONAL WESTERN MINING CONFERENCE, DENVER, COLO, FEBRUARY 8, 1958

I am very pleased to be here with you this evening. I hope to hear reports from you on your 3-day conference, and to discuss with you some of the problems facing the uranium mining and milling industries today. I also will attempt to comment briefly on some of these problems.

Since 1954, I have been a frequent critic of the Atomic Energy Commission. It is with particular pleasure, then, that I say the Commission is to be commended for having declassified all ore production and reserve figures since June 30, 1955. I think more declassification may be in order.

It may soon be possible, for example, to declassify and make available in public document rooms copies of all milling contracts—both in the United States of America and in Canada. As of December 31, 1957, there were 16 mills operating in the United States (6 in Colorado, 2 in New Mexico, 4 in Utah, 1 in South Dakota, 1 in Arizona, 1 in Wyoming, and 1 in Washington) and 9 more under construction or contract (2 in Colorado, 2 in Wyoming, 1 in Oregon, and 4 in New Mexico). As I understand it, the AEC has followed a policy of keeping secret the individual prices negotiated in these contracts, perhaps in order to drive harder bargains with others and obtain a lower price in subsequent negotiations. This, however, seems to me to raise some problems, in view of the considerable amount of information and bargaining power available to the AEC, as compared to the representatives of the milling company sitting on the other side of the bargaining table.

Since there are no problems of national security or restricted data here, I believe that there are reasons for saying that AEC should make more information of this type available in public document rooms in Washington, D. C., in Grand Junction, and in other places convenient to uranium mining and milling companies. The AEC may have a point in keeping some proprietary information confidential, as a means of preventing price fixing, or following-the-leader practices in negotiating prices. However, the surest way to promote honesty and fair dealing in most any business is to keep everything above board and out in the open.

Also, there are a number of contracts, perhaps a dozen or more, between the Atomic Energy Commission and the El Dorado Mining Co. for purchase of Canadian concentrates. At the present time, the average price being paid under these contracts is higher than the price being paid under our domestic contracts. I realize that there were reasons for keeping these contracts secret at the time that they were originally negotiated with the Canadians, but I believe that those days have now passed and that there are good reasons why these contract prices should not be made public.

Recently, the Atomic Energy Commission has proposed substantial amendments to the Atomic Energy Act of 1954 in order to permit greater exchange of information and material with our allies. This information and material would pertain directly to our allies' atomic weapons capability. Perhaps in view of these proposed modifications, we should review our entire security system in order to see whether or not more information could and should be made available to American industry.

Now, let me move on to the subject of the small miner and the dangers of concentration and monopoly in the uranium mining and milling industry. Mr. Elton A. Youngberg, Assistant Manager for Operations of the AEC Grand Junctions Operations Office, in an address here in Denver last December 16 made available some interesting statistics on this problem. According to Mr. Youngberg, the 6 largest shippers of uranium ore during fiscal year 1957 provided 1,871,835 tons of ore, or 55.7 percent of the total production in the United States. That is more than one-half of the total production, and coming from only 6 out of 727 shippers of uranium ore.

Moreover, beginning in 1962, the AEC will purchase its concentrates only from the milling companies. I wonder what the effect of this policy will be upon the small independent producer. Will the large milling companies be able to use this new system to drive the small independent producers out of business?

If the AEC decision to limit drastically further milling is permitted to stand, will this not have the future effect of driving the small miner out of business, and further concentration of power in the hands of the large companies operatin gthe uranium mills?

When one considers that most of our original ore discoveries were made by the individual miners or the small mining company, one must feel a certain sense of sorrow in observing this tendency toward big business and elimination of the small miner.

In uranium procurement, as in other matters, we have problems with our Canadian neighbors. At our request, they joined with us in the quest for uranium in 1948. They subsequently made substantial discoveries, especially in the Blind River area, and are delivering concentrates at the rate of about 10,000 tons this year, and are scheduled to level off at about 13,000 to 14,000 tons per year until most of the contracts expire on March 31, 1962. The Canadians, I am informed, could produce perhaps twice that amount per year except for the brakes that were placed upon the Canadian program by the AEC 2½

years ago when it was announced that guaranteed price supports would not extend, with only a few exceptions, beyond March 31, 1962.

As I understand the AEC plan for the period 1959–62, it is to limit commitments about as follows: Domestic commitments to about 17,000 to 18,000 tons a year, Canadian import commitments to about 13,000 or 14,000 tons a year; and commitments for imports from all other foreign sources, principally South Africa, to about 6,000 tons per year, making a total of about 36,000 to 38,000 tons per year during this period.

The Canadian production is, of course, less rich than our average domestic ores since we get about 5½ pounds of uranium oxide from a ton of ore, as compared with about 2½ pounds of uranium oxide per Canadian ton of ore. Largely for this reason, the AEC feels justified during the current fiscal year in paying an estimated average foreign price per pound of $11.15, as compared with the estimated average domestic price of only $9.60 per pound of U_3O_8 in the current fiscal year 1958.

I can well understand the unhappiness of the domestic uranium miner in seeing his Government pay a higher price for processing ores in Canada that do not even meet the 0.20 percent minimum quality required for our domestic miners.

On the other hand, speaking as a lawyer, it seems clear to me that, both legally and morally, our contract commitments with our Canadian friends until March 31, 1962, are binding and should be honored. Thereafter, I surely see no justification for paying a premium for Canadian or other foreign ore.

Perhaps our British friends, who are making excellent progress with their Calder Hall reactor development program, can contract to acquire more Canadian ores.

I realize that this is a complicated subject involving important relations with a close neighbor and ally. Moreover, our committee is just beginning to study this problem. Therefore, we have not reached any final conclusions, and we will not do so immedately nor rashly, but it does seem clear to us that the Canadian program is necessarily very closely interrelated with our own.

As an elected Member of the Senate, I am answerable to the taxpayers of our country, especially to those from the sovereign State of Tennessee. Mineral stockpiling programs, as you are aware, are expensive. However, if it becomes clear that we can stockpile domestic uranium concentrates at a cost substantially less than that of current foreign uranium concentrates, we will consider doing so in the national interest.

A stockpiling bill, H. R. 5010, was introduced by the distinguished chairman of our committee, Congressman Carl T. Durham, of North Carolina, during the last session of Congress. The committee has not yet held hearings on this bill, or on the general desirability for stockpiling, but perhaps the time is now ripe.

Some of these thoughts also remind me of the proposal made 2 years ago by Senator Anderson, of New Mexico, and Senator Jackson, of Washington, chairman of our Subcommittee on Military Applications, in a letter to the President proposing the establishment of an atomic "bank" of fissionable materials. They were turned down by the President, primarily on the ground that there was not enough raw materials or processing facilities. Perhaps we should request a reconsideration in terms of a stockpile or bank of concentrates. Such a supply of concentrates would provide the base for increased expansion, either in the military or in the peaceful uses of atomic energy.

I understand that the area perhaps most severely affected by the Commission's recent limitation decision is in Wyoming where there have been substantial recent discoveries, but with only a few milling outlets now available. My good friends and colleagues on the Joint Committee, Congressman Jack Dempsey and Senator Clinton P. Anderson, also remind me that there are hardships and problems in New Mexico, and the Joint Committee has also been advised of difficulties in the front range of Colorado, in Texas, in California, in Washington, and perhaps problems also exist in varying degrees in other places. During the last 2 weeks of February, the Joint Committee will hold open hearings on the development, growth, and state of the atomic energy industry, as required by section 202 of the act. The dates of Monday, February 24, and Tuesday, February 25, have been tentatively set aside for testimony by representatives of the uranium mining and milling industries. I know that some of you in the audience are scheduled to testify, and others are welcome to either appear personally or submit a written statement for the record. The statements should be forwarded to the Joint Committee by March 1, 1958.

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In addition, the AEC has been asked to conduct a survey of the effect upon the domestic industry arising from its October decision and to report to the Joint Committee. This report should be submitted by March 15.

Thereafter, later in March or April, the Subcommittee on Raw Materials, of which I am chairman, will hold public hearings on the Commission's ore-procurement policies. After these hearings, our committee will study and evaluate all the information we receive, and consider possible courses of action to deal with the problem.

As some of you may know, I have sponsored for the last 3 years a bill to provide additional Federal funds to accelerate our atomic power program. Two years ago, in 1956, my bill passed the United States Senate with a comfortable margin, but regrettably was defeated in the House, and by a very narrow margin at that. Last year, in the wake of the economy drive, my bill was not brought up in either House, but this year, I have introduced a new bill, S. 3000, to provide for nuclear-energy development in the amount of $1 billion. This bill would provide funds needed immediately for an expanding atomic-power program, and would also provide funds for research on a long-range program (nuclear propulsion through space) and a very long-range program (controlled thermonuclear power).

Since the rumor is going around that controlled thermonuclear power is just around the corner, I feel that I should say a few words about the fusion program, including the recent January 21, 1958, announcement.

The achievement of a controlled thermonuclear reaction, or releasing sustained energy from the fusion of the nuclei of hydrogen elements, is still far distant. The experiments in both Great Britain and the United States have not yet even reached the stage corresponding to December 2, 1942, when the first self-sustaining fission reaction took place. To create a corresponding self-sustaining hydrogen reaction would require an estimated temperature of 370,000,000° C., or 14 to 18 times the temperature in the interior of the sun. As indicated by the recent reports, British scientists have achieved at Harwell temperatures as high as 5,000,000° C. for about five one-thousandths of a second. The American scientists have reached temperatures of the hydrogen gas of as high as 6,000,000° C., but for shorter periods.

We have thus proceeded only a very short way along the road to achieve a controlled thermonuclear reaction. In my opinion, we have as a minimum the time it has taken us since the Fermi reactor of 1942 to go along this thermonuclear road. When we add to these considerations the fact that we have not yet reached a controlled thermonuclear reaction, and that (as we have learned in fission reactors) many, many years of further developments are needed thereafter, it is clear that we still have a long way to go. I believe we should proceed with vigorous research in this program, but I believe that the immediate need is for an expanding atomic-power program, based upon a sound uranium supply.

I have spoken often before as to the need for an accelerated atomic-power program, and therefore I shall say just a few words on this subject tonight. Last summer I traveled with other members of the Joint Committee on Atomic Energy to the opening meeting of the International Atomic Energy Agency in Vienna, Austria, and also visited various atomic energy facilities and laboratories in Western Europe. I visited Calder Hall in England, the Mol Laboratories in Belgium, and the Risoe Laboratory of Niels Bohr in Denmark. I saw a reactor constructed completely underground in Sweden, and I also spent 5 interesting days in Soviet Russia, where we inspected their much publicized 5,000 kilowatt reactor, and also their expanding nuclear research center at Dubna, north of Moscow.

In reflecting upon what I learned there, I believe we must be prepared to compete with the Soviets, and also with our British friends, in the development of nuclear power. Like the sputniks and the satellites, this is a scientific and difficult field which has caught the imagination of the peoples of the world, and the United States cannot afford to come in second or third best. I believe that we must make greater efforts than the AEC is now making. I think it is possible to help private industry, which now frankly admits that help is needed—and also provide for a program for construction of reactors by the Federal Government.

I do not underestimate the importance of adequate supplies of nuclear weapons material. But our hopes for the future are tied to the peaceful uses of this great source of energy.

Our supplies of conventional fuels, though comparatively abundant, are not inexhaustible, and known reserves are far from sufficient to meet prospective energy requirements. The world looks to uranium to fill the need.

We can and we must accelerate our efforts to develop the techniques and processes for the economical conversion of uranium into electric energy. When atomic power in commercial and industrial quantities becomes a reality—and it will become a reality—there will be an expanding market for your product. We are at the threshold of a new era, and you in the uranium industry have every right to look to the future with confidence.

APPENDIX 7

[Press release No. 132, March 17, 1958]

AEC REPORT ON URANIUM MINING AND MILLING PROBLEMS DELAYED 2 WEEKS

From the offices of the Joint Committee on Atomic Energy

Senator Albert Gore, chairman of the Subcommittee on Raw Materials, announced today that delivery of the AEC report on problems of the uranium mining and milling industry, originally scheduled for March 15, 1958, had been delayed, at the request of the Atomic Energy Commission.

The AEC has informed the Joint Committee that it anticipates that the report will be submitted within the next 2 weeks, and that it will include the Commission's decision as to recommended action.

In announcing the delay, Senator Gore said:

"The Commission informed me that it has completed its survey of the problems of the uranium mining and milling industry, but it is in the process of reaching a decision as to recommended action. The Commission requested a postponement, and I consented, because I believe that the report will be much more valuable if it includes the Commission's views on what should be done rather than just a survey of the problems of the industry. I am urging the Commission to reach its decision promptly. The recommendation can then be reviewed by the Joint Committee, and appropriate action, including any necessary legislation, can then be undertaken promptly to correct the problems of the industry."

Senator Gore indicated that the report would be made public after received, and that the subcommittee would decide whether or not to hold further public hearings after it has reviewed the report and the recommended AEC action.

APPENDIX 8

UNITED STATES ATOMIC ENERGY COMMISSION,
Washington, D. C., April 2, 1958.

HON. CARL T. DURHAM,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR MR. DURHAM: As requested by the Subcommittee on Raw Materials, we are transmitting herewith a report by the Division of Raw Materials dated March 31, 1958, which outlines the problems arising from the limitation of domestic uranium procurement announced October 28, 1957.

After study of the report, the Commission has taken action which will expand to a limited extent domestic uranium procurement. This action will provide an additional market for ore reserves developed prior to November 1, 1957. It is anticipated that this expansion will result in additional procurement contracts for mill concentrate increasing milling capacity by about 3,000 tons of ore per day and increasing annual concentrate production by about 2,500 tons of U–308.

It is the view of the Commission that it is in the best interest of the Government and the uranium industry to prevent overexpansion of production facilities and that the new capacity provided through purchase contracts should be held to a minimum. Nevertheless, the action taken in implementation of our procurement goal should provide a market in the vast majority of the cases which have been brought to the attention of the Commission and the committee.

Although the opportunity for industry to make private sales of uranium to foreign industrial users appears limited at this time, the AEC has under active study the question of licensing such sales subject to appropriate safeguards to assure that the material sold would be used for peaceful purposes.

Sincerely yours,

LEWIS L. STRAUSS, *Chairman.*

APPENDIX 9

A REPORT ON THE DOMESTIC MINING AND MILLING PROBLEMS RESULTING FROM LIMITATION ON ADDITIONAL MILLING CAPACITY BY THE DIVISION OF RAW MATERIALS, ATOMIC ENERGY COMMISSION

1. The Commission on October 28, 1957, announced a policy of limiting its contracts prior to 1962 for additional domestic uranium concentrate. Its Grand Junction Operations Office was instructed to negotiate no new contracts involving additional milling facilities.

2. This action was taken to keep the Commission's annual uranium purchases in reasonable balance with its currently estimated requirements. Recent rapid expansion of domestic production, and the prospects of continued rapid expansion under an unlimited procurement program, posed a threat of overproduction that in the end might have serious adverse effects on the uranium industry, as well as result in excessive purchases by the Commission.

3. A review of the background of the domestic uranium program will indicate the basis upon which the uranium industry was developed and the reasons for the problems resulting from the limitation announcement.

I. BACKGROUND

4. Private uranium exploration and development have been based largely upon the procedures followed for nearly 10 years under the Commission's domestic uranium program.

5. The objective of the Commission had been to purchase the uranium concentrate it requires from privately financed and operated mills. In addition to providing the Commission with the type of material required for its production chain, this procedure had the advantage of promoting the development of private uranium mining and milling along the established pattern of the mining industry.

6. Under the procedures followed during the period of uranium shortage, any area having developed sufficient commercial ore to support a milling operation was eligible for a concentrate contract. The prospective milling company had to negotiate a concentrate contract with the Atomic Energy Commission and had to provide reasonable evidence of being able to finance the mill construction and operation and carry out the terms of the contract. The independent miners were protected by provisions in the contracts requiring the milling companies to purchase a minimum quantity of custom ore, if offered, and to pay prices for ore not less favorable than those contained in the Commission's published ore buying circular. Because of discoveries after execution of contracts the mill capacity allocated to custom ore has in some cases proved inadequate, and in the past this situation was generally corrected by providing new mills or expansion of existing facilities.

7. It was largely on the basis of these procedures that prospectors, independent miners, and milling organizations engaged in prospecting, exploration, and mine development. Usually the major expenditures for development have been by the prospective milling companies because adequate ore reserves had to be available in order to finance the proposed milling operations and to qualify for an AEC contract. In most areas the prospectors and small miners were the pioneers making the initial discoveries. Many of them transferred their properties to mining or milling companies for cash or stock, or retained royalty rights or a working interest. Others developed and operated their mines and sold thier ore to the mills. Many, including some who as yet have no developed reserves, have continuing expenditures in order to hold their properties because of purchase or lease requirements, or the annual assessment work required under the United States mining laws.

II. SCOPE OF THE STUDY

8. Following the October 1957 announcement, the Grand Junction Operations Office was asked to study the effects of the limitation policy upon the uranium industry, with special reference to those who had spent money prior to the announcement for exploration, acquisition of property, development of ore reserves, mine preparation, or for metallurgical and engineering work in connection with proposed milling operations.

9. The survey concentrated on the areas and on the individual cases which have or may have ore marketing problems. All available information on ore reserves was taken into consideration. In addition, more than 150 individual mining properties were studied in detail to determine operating data. From this study minimum economic mining rates were calculated for individual properties. In the case of some of the smaller deposits, the minimum economic mining rate could exhaust the deposit in a year or two or even in less time. For some properties with large ore reserves, the minimum rate would result in an operating life well beyond 1966.

10. These estimates of ore production rates, taking into consideration the available market at mills now operating or under construction, were the basis of the estimates, by areas, the additional mill facilities required to provide a minimum economic market for presently developed ore reserves. No detailed studies were made of the mines in areas having no marketing problems although the areas as a whole were studied to determine the relationship between existing mill capacity and total ore reserves, and the possibility of future problems.

11. Industry has cooperated in supplying, on a business confidential basis, much of the basic data, such as drilling results and cost information. Much of the detailed information had been gathered earlier in connection with preliminary discussions on new milling proposals. Furthermore, the Grand Junction geological and mining staffs have maintained a continuing study of the various mining districts and most of the deposits since the initial discovery and development. Consequently, the Commission has reasonably complete information on the grade, and tonnage and mining characteristics of developed ore reserves. On the basis of this information we have estimated the rate of ore production required for an economic mining operation for the various types of deposits.

12. It should be emphasized that most of the approximately 700 mines now in operation, together with those being developed to supply mills under construction, are faced with no difficulties in marketing ore. In 1957, 3,676,000 tons of ore were mined and delivered to mills or buying stations. Mill requirements for 1958 are estimated at 5,500,000 tons of ore, and for 1959 at 7,200,000 tons. Thus the problems stemming from the limitation policy affect only a limited part of the domestic uranium industry, but for the areas and the individuals affected, the problems are serious.

13. In this study, the availability of mill capacity has been used in considering the market for ore. This is the type of market which has been provided in the past under the domestic uranium program. During the period of uranium shortage, the Commission established a number of ore buying stations to assist and speed up development of new areas. These stations usually offered only a limited market for ore pending construction of private mills and most of them now have been closed. At present, more than 95 percent of all ore produced is delivered directly to the private mills.

14. Government stockpiling of crude ore is an alternate method of providing a market for mine production. The purchase of crude ore, instead of concentrate, has the advantage of lower initial cost to the Government, but the final cost of the concentrate may be much higher. Eventually the ore will have to be milled to obtain a usable product and mills will have to be available or constructed near the stockpile sites because crude ore cannot stand high shipping costs. A considerable lead time might be required to convert the ore into concentrate. Stockpiles are subject to wind and erosion losses which are substantial, and for some ores soluble losses may be important.

III. DISCUSSION OF THE PROBLEMS

A. Current ore marketing problems

15. Most seriously affected by the limitation policy are the individuals and organizations who have developed or acquired ore reserves and now find that they do not have a market. If measured by the effort and money expended

prior to the announcement, this group probably would sustain by far the greater part of any losses which could be attributed to the limitation. Consequently, the study by the Grand Junction Operations Office was directed primarily toward determining the extent to which currently planned mill capacity would be inadequate to provide a reasonable market for developed ore.

16. This study shows that in certain uranium areas there are no mills, or that milling capacity at present is inadequate to provide an economic market for all mine operators having developed ore reserves; that in other areas existing mill capacity would be adequate if arrangements could be worked out for prorating mill capacity to the mining properties now producing or in position to produce; and that in some uranium areas there are no ore marketing problems and none are anticipated. A brief review of each of the individual areas is included in this appendix.

a. The areas listed below have either no market or an inadequate market to process presently developed ores at a minimum economic mining rate. These reserves include ores controlled by milling companies and by independent mine operators. Estimated minimum requirements for additional mill capacities to provide such a market are:

	New mill capacity, tons per day
(*a*) Southeast Texas	600
(*b*) North Dakota-South Dakota (lignites)	600
(*c*) Wyoming	1,700
(*d*) Colorado Front Range	200
(*e*) Nevada (Austin)	200
Total	3,300

Based on the average grade of ore in the several districts, 3,300 tons of new mill capacity would produce an additional 5,300,000 pounds of U_3O_8 per year.

Presently authorized milling capacity taken in conjunction with proposed additional mills should provide a minimum market for the independent mine operators and for the mines controlled by the milling companies, provided all existing mines are given a proportion of the market.

b. Six areas have adequate milling capacity in relation to total developed ore reserves, but the portion available for ore from independent miners is or may be insufficient because the ore reserves controlled by independent miners have been increased since the milling contracts were negotiated.

These areas are:

(*a*) White Canyon-Monument Valley, Utah-Arizona.
(*b*) Eastern Wyoming-Black Hills, South Dakota.
(*c*) Salt Lake City, Utah (area tributary to the Salt Lake City mill).
(*d*) Moab (Big Indian Wash), Utah.
(*e*) Grants, N. Mex.
(*f*) Spokane, Wash.

In the case of these areas a reasonable market for all mines with developed ore reserves might be provided without additional mill construction. The problem is one of making equitable provision for production from the various mines. If adequate provision cannot be made, some additional capacity may be required.

c. The following areas have an adequate market for ore produced from the known mines:

(*a*) Uraven mineral belt, Colorado.
(*b*) Cameron district, Arizona.
(*c*) Shiprock district, New Mexico.
(*d*) Lakeview, Oreg.
(*e*) Baggs-Maybell, Wyo-Colo.

d. In addition to those listed above, there are several areas in which uranium occurrences have been discovered but which do not have sufficient ore reserves to support an economic milling operation. For example, the known deposits in California are generally small and widely scattered. Total reserves, particularly those which might be economic to mine, contain but a small fraction of the quantity needed for even a 5-year milling operation. At present, there is no basis for predicting that sufficient commercial ore could be developed to support an economic milling operation. It may pay the miner to ship selected higher grade ore from some of the deposits to one of the existing mills.

e. *Special problems.*—Although every effort has been made to obtain full information and arrive at accurate estimates, additional information and discussions with mine operators may indicate revisions are desirable. Also, there may be special cases which do not fall in the categories as discussed above.

B. The small mine operator

17. Many of the problems of the small mine operator have been dscussed under A above. In this report the term "independent miner" has been used to designate the mine operator, large or small, who has no financial interest in a mill or whose mining operation is not controlled by a milling company through an operating arrangement or lease.

18. The size of a mining operation usually is determined by the size of the deposit. The small operator who develops a large deposit becomes a large operator unless he sells or leases his property, which he often does. Many of the large uranium deposits cannot be operated at a low production rate because of the large capital expenditure required. This is particularly true in the Ambrosia Lake district, New Mexico, and the Gas Hills district, Wyoming. In some districts the deposits generally are small and small operations predominate.

19. Since most small mine operators work small deposits, and many of these deposits are marginal or submarginal, many small operators have economic problems because of the type of the deposits they work. Problems of this type are not the result of the limitation on procurement.

20. The domestic uranium program has been designed to help in opening up new deposits. The Initial Production Bonus, Circular 6, provides additional payments, which may total $35,000, on the first 10,000 pounds of U_3O_8 contained in ore from any new property that is sold to a mill or buying station. The bonus has helped the small miner in bringing mines into production. Also, small deposits that have proved marginal have been tested by mining with a minimum of loss or even a profit. This is evident by the large number of deposits which have been abandoned when bonus payments were completed.

21. The problems of the small miners will receive continuing attention.

C. Current provision for milling capacity to cover future ore discoveries

22. Some industry representatives have proposed that assurances should be given that milling contracts would be negotiated to provide a market for additional ore discoveries.

23. The most difficult problems under this category relate to those who have invested money in geological studies and land acquisition but as yet have no developed ore. In some cases substantial commitments already have been made and the lease arrangements require heavy continuing expenditures and active mining if commercial ore is found. Failure to proceed may mean loss of investments already made. Those in this position contend that further expenditures would not be justified without assurance of a market for the ore that may be found. Some have requested assurances of a concentrate contract if sufficient ore is developed to support a milling operation.

24. If assurance is given that concentrate contracts will be negotiated to provide additional milling capacity for ore that may be found, there can be no effective limitation on procurement. There is no way of predicting with certainty how much ore will be found and what economic mining rate will be required. Our latest estimate of domestic ore reserves is 78 million tons. Geological evidence is favorable for finding additional reserves of similar magnitude by active exploration. If, instead of providing new milling capacity, future ore discoveries share the mill capacity which has been provided for ore reserves already developed, the result might be an unsatisfactory and uneconomic market both for those who already have developed ore at substantial expense and those who find and develop new deposits. For the immediate future at least, the market for newly discovered ore should depend primarily upon the capacity that may be available, without displacing presently developed ore, at mills now in operation or under construction, plus any additional capacity that may be provided for those who already have developed reserves. That there will be a substantial market in many areas for ore to be developed between now and the end of 1966, or even prior to 1962, is indicated by the following discussion on future exploration.

D. Incentive for future exploration and development

25. Concern has been expressed that a limitation on Government purchases will eliminate the incentive for exploration and that ore reserves will be seriously depleted during the period of the AEC program.

26. In some districts additional ore must be developed to provide for the operation of existing mills prior to 1962, and in all districts additional ore development may be required prior to 1966. Although estimated domestic ore reserves theoretically would support a milling rate of approximately 8 million tons of ore a year for about 9 years, in practice this would not be the case. Mining operations in general are not capable of sustaining a given rate of production but experience a declining output as the mines approach exhaustion. This means that there is need for continuing exploration and development on the basis of the present Government market. However, rate of exploration and development can be expected to decline sharply for a time if there is no longer an expanding uranium market.

27. Maintenance of adequate ore reserves by private industry for the industrial market in the post-1966 period will be based largely upon industry's appraisal of that market. At present, industry in general has confidence that there will be a substantial future industrial market but has little firm data upon which to estimate the size and timing of that market. As long as this uncertainty exists, exploration and development for the future market will proceed cautiously and on a limited scale.

28. A sizable market for nuclear fuel now seems to be developing in Europe and other power-short parts of the world. The domestic uranium industry desires to compete for that market as soon as possible. Although the opportunity for private sales may be limited at present, industry could better assess the future market if it were in a position to undertake negotiations for sales with prospective industrial users.

29. The question of licensing such sales subject to appropriate safeguards on end use is under active study by the AEC.

30. There should be a continuing study of ore reserves in relation to future requirements, taking into consideration the anticipated needs of the nuclear power industry. A periodic appraisal should provide the information needed to determine what action, if any, should be taken by the Government if at any time reserves appear inadequate in relation to national requirements.

SUMMARY

31. The study made by the Division of Raw Materials indicates that 3,300 tons of ore per day is the additional milling capacity required to provide a minimum economic market for developed ore reserves in those areas which can support economic milling operations. It is recognized that in order to prevent possible inequities, this estimated milling capacity may have to be increased by a moderate amount. In terms of concentrate procurement, 3,300 tons of ore per day of new milling capacity would yield in excess of 2,650 tons of U_3O_8 annually. Production under existing domestic contracts for fiscal year 1961 is estimated at 17,500 tons of U_3O_8 and if the additional milling capacity is provided, production for that year would be in excess of 20,000 tons of U_3O_8.

32. Government stockpiling of crude ore is an alternative to concentrate procurement.

33. The problems of those who have made investment in the acquisition of land preparatory to undertaking exploration programs are recognized, but no estimate can be made of the additional milling capacity which might be required for future discoveries, because the magnitude of such discoveries cannot be predicted. If action is taken which would commit the Commission to provide through purchase contracts or additional milling facilities, a market for all ore reserves of commercial size and grade that may be discovered in the future, there could be no effective limitation policy.

34. The study indicates a need for a continuing review of the ore reserves in order to provide the information needed to determine what action should be taken if reserves at any stage appear inadequate in relation to national requirements.

ANALYSIS OF MARKETING PROBLEMS BY DISTRICT

Every district having substantial ore reserves has been evaluated during the course of this survey. A brief summary of the results of the survey is given in the following pages by individual district.

All available information on ore reserves and ore grades was taken into consideration in evaluating each situation. Much of the information used in calculating the tonnage and grade of ore reserves is based upon drilling by private operators. We believe that our overall information is reasonably complete and accurate and that any possible omissions will have but minor effect upon the estimated total reserves as of November 1, 1957.

More than 150 individual mining properties were studied in detail in arriving at estimated minimum economic mining rates. These are all located in areas where marketing problems are reported.

The term "captive ore" refers to ore owned or controlled by companies operating the mills. The terms "independent ore," or "custom ore," refer to ores owned or controlled by others. Estimates of the grade of ore used in discussions of the individual districts relates to the grade mined and takes into consideration normal dilution in course of mining.

Baggs-Maybell area (Wyoming-Colorado)

Situation.—Indicated and inferred ore reserves in the district as of November 1, 1957, are estimated at 564,000 tons with an average grade of approximately 0.16 percent U_3O_8. Of this total, 85,000 tons are controlled by two independent operators in the Baggs area. Several other operators have been carrying on development work but no substantial reserves of commercial grade ore had been developed prior to November 1, 1957. Mill capacity is 300 tons per day, of which 75 tons is reserved for custom ore.

Analysis of situation.—There appears to be an adequate market for all ores of the district. Based on ore developed by November 1957, and the rated mill capacity, the ores could be treated by the end of 1962.

California

Situation.—Only small, scattered ore deposits have been developed in the State. Indicated and inferred reserves of commercial grade ore totaled 27,000 tons as of November 1, 1957, having an average grade of 0.29 percent U_3O_8.

Analysis of situation.—Ore reserves developed to date contain only a small fraction of the tonnage necessary to support a commercial milling operation. A market may be available at one of the existing mills in nearby States for selected high grade ores of the area.

Colorado Front Range

Situation.—A large number of uranium occurrences have been found in the Colorado Front Range but few have been developed sufficiently to provide the data needed to establish developed ore reserves. Our estimate of the total indicated and inferred ore reserves for the district as of November 1, 1957, was approximately 140,000 tons, ranging in grade from 0.20 to 0.70 percent U_3O_8 and averaging approximately 0.40 percent U_3O_8. Because there are a number of potential sources a considerably larger tonnage might be available if there should be a local market for all of the various types of ore that have been found.

Two new mills just starting operations, one at Gunnison, Colo., and the other at Rifle, Colo., are offering a limited market for the more amenable ores of satisfactory grade.

Analysis of situation.—Numerous small size deposits have been found along 250 miles of the Front Range in Colorado. Ore types vary from primary minerals associated with sulfided and secondary minerals in fissure type vein deposits (some of it quite rich in uranium) to the usual mineralization in sandstones and other sedimentaries (much of it low grade). Such wide variation in minerals and mineral association results in a wide variety of metallurgical characteristics. Further testing of the available ores may be required before the most effective milling method can be established. While it is possible that a single treatment method would be satisfactory, auxiliary circuits for ores having unusual characteristics might be necessary.

Sufficient ore of any one metallurgical type is not currently proven to justify an economical size mill in the area, with the possible exception of the highest grade vein type ores. Any mill constructed in the area would be required to supply a market for a major portion of the ores developed. The minimum size for an economic milling operation is generally considered to be about 200 tons of ore per day.

Eastern Wyoming—Black Hills, S. Dak.

Situation.—The present mill capacity of approximately 400 tons per day at the Edgemont, S. Dak., mill is sufficient to supply a market for all indicated and inferred ore reserves developed on November 1, 1957. The mill is a custom mill, having no captive ores.

Indicated and inferred ore reserves in the tributary area are estimated at 499,000 tons on November 1, 1957, including 105,000 tons in stockpiles at the mill. The grade of the ore is approximately 0.23 percent U_3O_8.

Analysis of situation.—While the mill capacity in the area is sufficient to permit the treatment of all ores developed as of November 1, 1957, before March 31, 1962, there exists a current marketing problem. The combined mining capacity exceeds the amount the mill can treat. Operators of the Edgemont mill have instituted a system of allocation for the various independent producers.

Grants, N. Mex., and Gallup, N. Mex., areas

Situation.—Indicated and inferred ore reserves in these districts as of November 1, 1957, are estimated at 52,775,000 tons, of which 49,775,000 tons are calculated as captive ore and 3,000,000 tons as independent ore. The average grade of the ore is expected to be 0.24 percent U_3O_8.

When mills now under construction are completed, total mill capacity in the area will be 11,683 tons per day, of which 1,169 tons per day will be available for custom ores.

Analysis of situation.—A market appears available for independent ores developed prior to November 1, 1957, which should permit mining at economic rates over the next 8 years.

Development of mines in the Ambrosia Lake area is currently behind schedule due to the mining problems being encountered. With mill construction on schedule, this slow mine development should assure independent operators of a market in excess of the minimum provided in AEC contracts. As captive mines are brought into full production, the market for independent ores will probably be held to that provided by contract. The possibility exists that a temporary shortage of mill capacity may occur if all independent mines reach peak production at the same time. Some adjustment may be possible if this situation occurs.

The largest reserves controlled by independent operators in this area are in the Ambrosia Lake district and most of them are subject to the same mining problems now being encountered in the captive mines.

Earliest dates by which the November 1957 ore reserves could be milled with presently planned milling capacity is shown in the following tabulation:

	Reserves plus stockpiles	Mill capacity (tons per day)	Indicated lapse of reserves
Captive	49,775,000	10,514	August 1971.
Independent	3,000,000	1,169	August 1965.
Total	52,775,000	11,683	

Independent operators control 5.6 percent of the estimated ore reserves in the district and have 10 percent of the total mill capacity.

Little Colorado, northern Arizona

Situation.—Indicated and inferred ore reserves in the district as of November 1, 1957, are estimated at 309,000 tons, with an average grade of 0.20 percent U_3O_8. The capacity of the Tuba City mill is approximately 300 tons per day. Many of the deposits in the area are proving submarginal and the mill is faced with a possible ore shortage within 3 or 4 years.

Analysis of situation.—Present mill capacity is sufficient to provide a market for all mining operations in the district.

Moab (Big Indian Wash), Utah

Situation.—Present mill capacity in this area is sufficient to allow processing of all indicated and inferred ore reserves prior to 1967.

Tributary indicated and inferred ore reserves plus stockpiles in the area as of November 1957 are estimated at 4,179,000 tons, having an average assay of 0.37 percent U_3O_8.

Analysis of situation.—If satisfactory arrangements can be made for allocating mill capacity to the various mines in the district, it should be possible for the mines to operate at a rate consistent with good mining practice for economical extraction of the ores.

Based on a mill throughput of 1,500 tons per day the estimated dates by which the November 1, 1957, ore reserves plus stockpiles would be milled are shown below:

	Reserves	Mill capacity (tons per day)	Estimated date
Captive plus stockpiles	2,541,000	980	February 1965.
Independent	1,638,000	520	August 1965.
Total	4,179,000	1,500	

Nevada (Austin)

Situation.—Indicated and inferred ores in the area on November 1957 totaled 215,000 tons assaying 0.18 percent U_3O_8.

There is no nearby outlet for the production from central Nevada.

Analysis of situation.—The area of known reserves is located some distance from rail facilities. The truck haulage coupled with rail freight charges to the nearest mill make shipment uneconomical except for a small tonnage of high-grade ores. Unless a mill is built locally much of the ores in the area will have no market.

The minimum size for an economic milling operation is generally considered to be about 200 tons of ore per day.

Salt Lake district, Utah

Situation.—Indicated and inferred ore reserves in the central part of the Salt Lake district are estimated at 397,000 tons, assaying 0.20 percent U_3O_8, as of November 1, 1957. The majority of these reserves are controlled by three companies.

Indicated and inferred reserves in the Green River district on November 1, 1957, are estimated at 328,000 tons. Of this total 299,000 tons are in deposits owned by two companies whose entire production is now processed at the Salt Lake City mill, which has an approximate capacity of 600 tons of ore per day.

Analysis of situation.—The Salt Lake City mill is primarily a custom mill. Because of its advantageous location with respect to transportation, it is the logical outlet not only for the reserves mentioned above, but also for ores from the Reno, California, Montana, and Colorado districts. In addition, the mill treats ore from a large producer in the Moab, Utah, district.

An adequate market should be available to all of the mines tributary to Salt Lake if the milling capacity is properly distributed to the various producers.

The recent completion of a 300 tons per day concentrator at Green River, Utah, to process vanadium-uranium ores from the San Rafael district provides an additional outlet for mines in the Salt Lake and Green River districts.

Shiprock, N. Mex.

Situation.—The present mill is operated at a rate of 300 tons per day which is sufficient to provide a market for all mines in this district.

Indicated and inferred reserves as of November 1957 are estimated at 187,000 tons and including stockpiles totaled 30,000 tons. Grade of ore is expected to average 0.27 percent U_3O_8.

Analysis of situation.—The Shiprock mill has in the past operated at 500 tons per day but mill capacity has only been maintained by purchases of ore from the Commission and from other areas such as the Gallup, N. Mex., and Grants, N. Mex., areas.

It is indicated that all developed reserves in this district can be mined and treated before expiration of the Commission's ore purchase program on March 31, 1962. Because of their vanadium content, any remaining ores in the district should find a market in the vanadium mills to the north.

The milling capacity is adequate for known ores of the area.

Southeast Texas

Situation.—No market is available for the ore reserves as of November 1, 1957, in Karnes and Duval Counties. The nearest market is at Grants, N. Mex., and freight rates make shipment to the mills there uneconomical.

Indicated and inferred reserves in the two counties are estimated at 1,713,000 tons of a 0.25 percent U_3O_8 grade.

Analysis of situation.—The shallow deposits in Karnes County can be easily and quickly mined but the total present developed reserves will not support a mill. The majority of the reserves are in Duval County and must be mined by underground methods. The logical site for a mill is Duval County with the ores from Karnes County transported for processing, a distance of some 90 miles.

Based upon the total ore reserves and mining conditions a mill having a capacity of about 600 tons of ore per day is indicated.

Spokane district, Washington

Situation.—Indicated and inferred ore reserves in the district on November 1, 1957, are estimated at 1,038,000 tons assaying 0.19 percent U_3O_8.

Present mill capacity is approximately 400 tons per day, of which 100 tons per day are available for custom ores.

Analysis of situation.—The mill capacity at the plant near Ford, Wash., should be adequate to process all presently indicated and inferred ores in the district by early 1965.

The only large reserve of independent ore developed on November 1, 1957, is held by one company, with small reserves held by a second company. Based upon information available to the AEC, exploration by other operators has not been successful in developing any significant tonnage of commercial grade ore. Heavy surface cover has made prospecting and exploration difficult in this area.

Twenty-five percent of the milling capacity is available to independent producers who control only 18 percent of the existing ore reserves.

Uraniferous lignites, North Dakota-South Dakota

Situation.—The uraniferous lignites have no market at present since they cannot be processed in any mill currently operating or under construction. Special milling methods have had to be developed.

Although our data on private drilling is incomplete, information that has been presented indicates that the developed and partially developed ore reserves may approximate 500,000 tons having a grade of approximately 0.20 percent U_3O_8 with a potential, based upon present geological studies, of an additional 500,000 to 1,000,000 tons. Because there have been no commercial mining or milling operations, estimates of the economic reserves—material that can be mined and milled profitably—are not as firm as the estimates of the ore reserves in other areas where cost information on mining and milling is available.

A firm milling proposal has been submitted to the Commission offering concentrate at a competitive price. The proposed mill would have a capacity to process 600 tons of lignite per day and this appears to be the minimum size for economic operation.

Uravan Mineral Belt, Colo.

Situation.—Total milling capacity at the Uravan, Rifle, Durango, and Grand Junction mills is 2,580 tons per day. Of this capacity approximately 2,300 tons per day is available for processing the Uravan Mineral Belt ores. Some of the uranium-vanadium ore processed by these mills comes from mines outside of the area.

Available indicated and inferred ore reserves in the district comprising the Uravan Mineral Belt are estimated to be 3,256,000 tons as of November 1, 1957, having a grade of approximately 0.30 percent U_3O_8.

Because of the nature of the deposits opportunity for development of ore reserves in advance of mining is limited. Much of the ore is discovered in connection with mining of known deposits. While the November 1957 ore reserves might appear to be sufficient to supply the mills only until April 1961, ultimate ore reserves are expected to meet requirements of existing mills for a much longer period.

This area has the largest number of small uranium producers of any area. Of the 555 independent uranium mines which produced less than 1,000 tons per year in fiscal year 1957, 207 are in the Uravan Mineral Belt.

Analysis of situation.—Mills are purchasing all amenable ores offered for sale and should continue to do so. This ready purchase is necessary because of the erratic nature of the deposits requiring a slow mining rate and a resultant uncertain daily production from any one mine.

The milling companies in this area adjust production from captive mines to allow purchase of independent ores.

The four mills in the area are designed to recover vanadium as well as uranium from the carnotite ores found in the district. The quantities of uranium that might be produced after March 31, 1962, may be affected by the industrial requirements for vanadium since the Commission has no commitment to purchase V_2O_5 after that date.

White Canyon-Monument Valley, southeastern Utah and northern Arizona

Situation.—Indicated and inferred reserves are estimated at 1,869,000 tons as of November 1, 1957, assaying 0.28 percent U_3O_8. Reserves of the Monument No. 2 mine of Vanadium Corporation of America, which contains high vanadium ores, are not included in this total. Monument No. 2 ore is being processed at the Durango mill.

The present mill capacity is 775 tons per day, of which 155 tons is available for custom ores.

Analysis of situation.—At the time the Mexican Hat mill contract was negotiated, the milling company controlled the only large ore reserve blocks on which a milling operation could be based. Two large deposits and numerous small deposits have been developed since then by other companies. At present independent mining companies control more than half of the known reserves.

Milling capacity is sufficient to permit the treatment by mid-1964 of all ores developed prior to November 1, 1957, at an economic mining rate if arrangements can be made to provide a larger percentage of the mill capacity for custom ores. Purchase of independent ores at a higher rate would extend the life of captive mines into the post-1962 period.

Wyoming

Situation.—Present mill capacity is inadequate to process the indicated and inferred ore reserves of central and northern Wyoming at a rate that will allow many of the mining companies to mine their ores economically. When mills now under construction are ni operation, milling capacity for the area will be approximately 1,845 tons per day, of which 654 tons per day is reserved for custom ore.

Indicated and inferred reserves in this district as of November 1, 1957, are estimated at 8,722,000 tons, of which 4,777,000 tons are controlled by independent producers. The grade is approximately 0.24 percent U_3O_8.

Analysis of situation.—A large part of the November 1957 reserves are comparatively low grade and shallow. Most of thees deposits will be mined by open-pit methods that require the use of large excavating equipment. The pits must be operated at a large daily tonnage rate to achieve reasonable costs.

Several of the operators control more than one deposit. By scheduling mining operations from a limited number of pits, an even flow of ore to the mills could be maintained, and the deposits could be mined out in an orderly manner.

The earliest dates by which the November 1957 ore reserves could be milled with the present milling capacity is shown in the following tabulation:

	Reserves	Present contracted mill capacity (tons per day)	Earliest date
Captive	3,945,000	1,191	March 1967.
Independent	4,777,000	654	August 1978.
Total	8,722,000	1,845	

An additional 1,700 tons per day milling capacity is needed to allow mining operations in the district to be maintained at a reasonably economic rate and to provide for moderate adjustment in the scheduling of mine operations. Such addition would provide a market before December 1966 for the greater part of the reserves of November 1957.

APPENDIX 10

[Press release No. 139, April 2, 1958. From the offices of the Joint Committee on Atomic Energy]

JOINT COMMITTEE MAKES PUBLIC THE REPORT BY AEC ON DOMESTIC MINING AND MILLING PROBLEMS

Congressman Carl T. Durham, chairman of the Joint Committee on Atomic Energy, and Senator Albert Gore, chairman of the Subcommittee on Raw Materials, announced that they have received today from the AEC its report to the Joint Committee on domestic mining and milling problems, and that they are making it available to the public immediately, together with the AEC letter transmitting the report.

The report and letter will be distributed by the Joint Committee to all representatives of the uranium mining and milling industry who testified before the committee during the public hearings on February 24 and 25, 1958.

Any persons desiring to comment on the AEC report are requested to forward them in writing to the Joint Committee by April 25, 1958.

In connection with the report, Senator Gore said:

"Our subcommittee would be glad to receive any comments from members of the industry or of the public. After receiving such comments, the subcommittee will decide whether to hold any further public hearings, and whether legislation is necessary."

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